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EPA Superfund
Record of Decision:

REVERE CHEMICAL CO.
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July 1994

EPA Superfund
Record of Decision:

Revere Chemical Site,
Nockamixon, TX

RECORD OF DECISION
REVERE CHEMICAL SITE OPERABLE UNIT ONE

DECLARATION

SITE NAME AND LOCATION

Revere Chemical Superfund Site
Nockamixon Township, Bucks County, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Revere Chemical Site ("the Site"), located on the southeast side of U. S. Route 611, just north of Route 412 and south of the town of Revere, Pennsylvania. This remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the remedial action for this Site. The information supporting this decision is contained in the Administrative Record for this Site.

The Commonwealth of Pennsylvania has indicated concurrence with the selected remedy. A letter of concurrence has not been received as of the date of the signing of this Record of Decision.

ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. [Para] 9606, that actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record of Decision ("ROD"), may present an imminent and substantial endangerment to the public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The contaminated media at the Site are divided into Operable Units as follows:

@OU1 Contaminated soil areas
Solid waste and miscellaneous debris
@OU2 Ground water
Mercury-contaminated sediments

This ROD addresses the first Operable Unit. EPA anticipates issuing a final ROD for Operable Unit Two within the next year. The selected remedial action for the first Operable Unit is a final remedy and will address contaminated soil and solid waste and miscellaneous debris on portions of the Site. The volatile organic ("VOC") soil contamination represents the principal threat. Therefore, treatment of the VOC-contaminated soil will be required.

The selected remedy includes the following major components:

@ Offsite disposal of solid waste and debris

@ Treatment of VOC contaminated soil by vacuum extraction

@ Source containment by slurry wall

- Source containment by capping
- Fencing to limit access to capped areas
- Site restoration by revegetation
- Deed restrictions
- Long-term ground water monitoring

STATUTORY DETERMINATIONS

The selected remedial action is protective of human health and the environment, complies with federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedial action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment which reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining onsite, a review by EPA will be conducted within five years after initiation of remedial action, and every five years thereafter, as required by Section 121 (c) of CERCLA, to provide adequate protection of human health and the environment.

Stanley L. Laskowski 12/27/93
Acting Regional Administrator Date
Region III

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RECORD OF DECISION
REVERE CHEMICAL SITE OPERABLE UNIT

DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The Revere Chemical Site (the "Site") is located southeast of U.S. Route 611, north of Route 412 and south of Revere in Nockamixon Township, Bucks County, Pennsylvania. The Site is located on an approximate 113acre parcel of property. (Figure 1, Site Vicinity Map) It includes two unnamed tributaries of Rapp Creek. The tributaries to Rapp Creek predominantly flow over bedrock. Rapp Creek is a tributary to Tinicum Creek, which is a tributary to the Delaware River. The Delaware River is approximately 4 miles from the Site. The Pennsylvania Scenic Rivers System has nominated Rapp Creek as part of the system. Rapp Creek has a nominated designation of Scenic, First Priority - Group A, and is in Water Quality Group 1. The area surrounding the Site includes recreational streams, forests, fields, and Pennsylvania State Game Lands. Nockamixon State Park is located approximately 4,700 feet southwest of the Site. Nockamixon Lake is located within the boundaries of the park and has a surface area of 1450 acres. State Game Land is located approximately 4,700 feet northeast of the Site. The Site is bounded on the south, east, and west by farm land. Cotner Trailer, a commercial operation that manufactures horse trailers, abuts the Site to the north.

The Site is situated in the portion of the Piedmont Physiographic province designated as the Piedmont Upland. The area is characterized by gently rolling hills and sloping topography. Elevations at the Revere Chemical Site range from approximately 520 feet above mean sea level at the north corner of the Site to approximately 390 feet above mean sea level along Rapp Creek and its tributaries at the southwest property boundary. Two types of wetlands, Riverine and Palustrine, are found on the Site. The endangered floral species Tomanthra auriculata (false foxglove) is also found on Site.

The Site is primarily drained by the east and west tributaries to Rapp Creek that join in the southeast portion of the Site and discharge to Rapp Creek approximately 300 feet beyond the property boundary.

The primary source of drinking water for the businesses and homes surrounding the Site is ground water. Private wells pump ground water from the Lockatong Formation.

II. SITE HISTORY AND ENFORCEMENT ACTIVITY

Facility documents regarding the Revere Chemical Company were destroyed in a 1984 fire on the Site. Therefore, documents from

EPA, PADER and the Bucks County Department of Health files provided most of the information regarding the historical layout of the Site and facility processes.

Beginning in approximately 1963, Echo, Inc. operated a reclamation facility. Echo's operations included metals reclamation from printed circuit boards, recycling of spent chromic acid, recovery of copper from plating solutions and production of copper chemicals. From 1963 to 1969 the Site was operated at various times by Echo, Inc., the DeRewal Chemical Company and the Revere Chemical Company. The companies arranged for the transport and onsite treatment of hazardous substances, including waste metal plating and etching solutions.

The area of the Site used for the processing of materials covered approximately 25 acres. The process area, now enclosed by a fence, contains several buildings and structures that were used during the metals reclamation operations. Also included are: the remains of 19 storage and/or process lagoons; the remains of a waste lagoon; and a fresh water pond. The East and South Spray fields are located outside the process area. They were used for liquids disposal during the metal reclamation operations.

Detailed descriptions of past Site operations are unavailable. Similarly, no detailed records regarding the types and quantities of sludge and plating materials stored on the Site during the years of operation are available. However, samples of materials in the process basins and lagoons on Site were collected by the Commonwealth of Pennsylvania, Department of Health ("PADOH"), PADER's predecessor, in March 1970. On the basis of this data, it was concluded that facility processes used chromic acid, copper sulfate, ammonia, ferric chloride, nickel, and sulfuric acid solutions.

In 1968, the Bucks County Department of Health determined that the facility had never submitted the required Pollution Incident Prevention Plan. Subsequent inspections revealed that waste material from the facility was escaping from the processing and holding lagoons on Site, and was entering the unnamed tributaries of Rapp Creek. The State and County Health Department took enforcement action against the company in an attempt to bring them into compliance with existing laws. The operators abandoned the Site in December 1969.

PADOH performed a response action at the Site during 1970 and 1971. An estimated 3.5 million gallons of waste sludges and liquids were removed.

Pumpable sludges were removed and disposed of at sea. The remaining sludges were fixed with lime, sodium sulfide and sodium sulfite, mixed with native soils, and buried onsite in process lagoons, and storage lagoons. As a result of this remedial action, the 25-acre portion of the Site where process operations occurred (the process area) has been extensively disturbed. No process or storage lagoons remain. Drums were reported to have been crushed and buried in former storage lagoon C and former process lagoon 7 during this action. (Figure 2, Site Features) Some of the lagoons were closed by the operator during the period of Site operation and the remainder have been closed during the remedial action by the PADOH. Present ground cover in the process area consists of bedrock fragments, soil, and miscellaneous debris (trash, uprooted brush, and small trees). For the most part, the ground surface is devoid of vegetation. The remaining 88-acre portion of the Site that was not used for metal reclamation is mostly vegetated.

The U.S. EPA performed additional response work at the Site from March 28 through April 17, 1984. This included the removal of 30 drums containing chromic acid and etching wastes, and 30 cubic yards of chemical solids from surface soils and the laboratory. Liquid wastes went to Frontier Chemical in Niagara, New York, and solid wastes went to Fondessy in Oregon, Ohio.

The Site was listed on the National Priorities List ("NPL") on July 22, 1987. The NPL is a list of hazardous waste Sites across the country in need of remedial evaluation and response. The Site scored 31.31 under EPA's Hazard Ranking System.

EPA entered into an Administrative Consent Order in December 1988 to conduct a Remedial Investigation and Feasibility Study ("RI/FS") with the following Respondents: AT&T Technologies, Inc.; Carpenter Technology Corporation; International Business Machines Corporation; and Yates Industries, Incorporated.

Installation of an 8-foot-high security fence was completed around the process area during the Phase I RI on October 4, 1989.

EPA issued an Administrative Order for Response Action to the Potentially Responsible Parties ("PRPs"), noted above, as well as a number of other PRPs in December 1991. This order required the removal of excavated drums and associated wastes staged onsite during the RI and the implementation of soil erosion and sedimentation controls. Wastes were removed from the primary staging area and the four temporary staging areas depicted on Figure 5.

A Phase II RI was conducted to fill in data gaps and complete the information collected in Phase I. EPA released the Phase II RI/FS reports and the Proposed Plan for the Site on July 28, 1993. The thirty day public comment period was extended from August 26 to September 25 providing a total of 60 days for public comment.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Community Relations Plan for the Revere Chemical Site was completed in June 1989. This document lists contacts and interested parties throughout government and the local community. It also establishes communication procedures to ensure timely dissemination of pertinent information. The RI/FS report and the Proposed Plan for the Site were released to the public on July 28, 1993, in accordance with Sections 113(k)(2)(B), 117(a), and 121(f)(1)(G) of CERCLA, 42 U.S.C. [Para][Para] 9613(k)(2)(B), 9617(a), and 9621(f)(1)(G). These and other related documents were made available in the Administrative Record located at the U.S. EPA Region III Office, 841 Chestnut Building, Philadelphia, Pennsylvania, 19107; and at the Site Repositories: Nockamixon Township Building, Center Hill and Lake Warren Roads, Ferndale, Pennsylvania 18921; Bucks County Free Library, 150 South Pine Road, Doylestown, Pennsylvania, 18901, and Bucks County Free Library, 229 California Road, Quakertown, Pennsylvania, 18951.

A public meeting was held on August 12, 1993 to discuss the results of the RI/FS and the preferred alternative as presented in the Proposed Plan for the Site. Notice of the Proposed Plan and public meeting was published in three local newspapers of general circulation: The Morning Call (July 25, 1993); The Daily Intelligencer (July 28, 1993); and The Quakertown Free Press (July 30, 1993). Additionally, copies of the Proposed Plan were mailed to many residences in the nearby vicinity of the Site and to other interested parties on the Site mailing list. EPA notified the public of the 30-day extension to the public comment period by placing a display advertisement in the Daily Intelligencer on September 1, 1993.

In accordance with 40 C.F.R. [Para] 300.430 (f)(3)(F), all significant comments on the Proposed Plan which were received by EPA prior to the end of the public comment period, including those expressed orally at the public meeting, are addressed in the Responsiveness Summary which is attached to this Record of Decision ("ROD").

IV. SCOPE AND ROLE OF THE RESPONSE ACTION WITHIN SITE STRATEGY

The National Contingency Plan ("NCP") (40 C.F.R. [Para] 300.430(a)(1)(i)) states that the general goal of the remedy selection process is to select remedies that: 1) are protective of human health and the environment; 2) maintain protection over time; and 3) minimize untreated waste. In addition, Section 121 of CERCLA, 42 U.S.C. [Para] 9621, includes general goals for remedial actions at all Superfund sites. The goals include: achieving a degree of cleanup which assures protection of human health and the environment (Section 121(d)(1)); selecting cost effective remedies (Sections 121(a) and 121(b)(1)); preference for selecting remedial actions in which treatment that permanently and significantly reduces the volume, toxicity, or mobility of contaminants is a principal element (Section 121(b)); and requiring that the selected remedy comply with or attain the level of any applicable or relevant and appropriate requirements ("ARARs") of federal or State environmental laws (Section 121(d)(2)(A).

The primary objectives of the remedy for the Revere Chemical Site, in addition to those stated above, are to prevent potential exposure to the contaminated media at the Site, to control and/or prevent the migration of contamination from the Site via wind, and surface water transport, and to reduce residual risk to acceptable levels. This is not the only response action planned for this Site. As a result of comments received from the U.S. Department of Interior, EPA has been made aware that further verification sampling of the stream corridor is necessary in order to evaluate the extent of stream corridor contamination related to mercury. This additional data gathering and subsequent evaluation of technologies for addressing stream corridor contamination will be conducted in another phase of the RI/FS. In addition, EPA is deferring the selection of a ground water remedy until additional ground water data is collected. The goal of the additional hydrogeologic investigation is to provide information on the practicability of actively pumping ground water to achieve background cleanup levels.

The Site-specific remedial response objectives, which take into consideration the level of contamination and the risks posed by the contamination, are as follows:

- @Protection of human health and the environment.
- @Source control of Site soils contaminated with hazardous constituents to prevent exposure through direct contact and to prevent leaching to ground water.
- @Preventing migration of contaminants from the Site via wind, and surface water transport.
- @Protection of surface water and sediment for current and future use, and protection of environmental receptors.

V. SUMMARY OF SITE CHARACTERISTICS AND EXTENT OF CONTAMINATION

The recent environmental conditions at the Site have been characterized through implementation of the Phase I RI. The results of the Phase I RI are detailed in a Phase I Report prepared by Dames & Moore on behalf of the Revere Steering Committee dated March 14, 1990. The Phase I RI characterized Site soil, ground water, surface water and stream sediments through a series of sampling and analysis. Soil samples were collected during the Phase I RI from a series of test trench excavations in areas of environmental concern. The RI also evaluated the quality of ground water in the overburden near monitoring well MW4. The results of these investigations are included in the Phase IA RI report dated July 23, 1990. The results of the Phase I and IA RI indicated that a Phase II investigation was necessary to further delineate the hydrogeologic conditions. The Phase II RI analyzed Site soil, ground water, surface water, stream sediments, and the onsite septic tank, and above ground storage tanks.

The results of the soil investigation identified ten metals: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, vanadium and zinc; all of which are present in Site soils at concentrations distinguishable from background. Metals concentrations were generally greater in the interval A or shallow (0-1 foot) soil sampled rather than the interval B or deeper (2 feet to bedrock) soil sampled.

A metals partitioning study was conducted as part of the Phase II RI to assess the potential for metals present in soil at the Site to migrate to ground water as a result of rainfall infiltration. The results of the study and scientific model predict that the metals in the soil will not adversely impact ground water quality above maximum contaminant levels ("MCLs").

Organic compounds detected in the soil included polycyclic aromatic hydrocarbons ("PAHs") and phthalates. The greatest concentration of Volatile Organic Compounds ("VOCs") in the soil is limited to the former process and storage lagoons, the former collection basins, an area south of the former process lagoons, and the Process Refuse Area. VOCs and Base Neutral Extractables ("B/Ns") were also detected in the East Sprayfield and South Spray field. Ninety percent of the South Spray filed, an area of approximately 8 acres, has been revegetated. The East Spray field has an area of approximately 11 acres, mostly vegetated, with the

exception of about 20% of the total area.

Polychlorinated biphenyls ("PCBs") were detected at low concentrations (less than 8.6 mg/kg) in very limited areas of the process area. PCBs were not detected in any soil sample from the spray fields.

Summary concentrations of contaminants detected in the interval A soil samples (0-1 foot of soil) in the process area, the South Spray field, and the East Spray field are listed in Tables 1, 2 and 3. Complete analytical results are contained within the RI Report and the Administrative Record.

Geology

The area surrounding the Site is underlain by various members of the Triassic-age Newark Group. The Lockatong Formation which underlies the Site is fairly homogeneous. It is composed of black to dark-gray, thickly-bedded argillites, with local occurrences of thin-bedded black shales. The Lockatong and Brunswick Formations are interbedded in the Site vicinity. The Brunswick Formation ranges in composition from a thick-bedded, resistant red to dark-gray argillite to a thinbedded, fissile, red shale, and siltstones. Fractures within the Lockatong and Brunswick Formations are found along bedding planes and as joints cutting across beds. The degree of fracturing is dependent on the thickness and brittleness of the beds. Bedrock is at ground surface to a depth of approximately 15 feet below ground surface.

Soil Characteristics

The predominant soil types at the Revere Chemical Site are the Abbottstown Series, Alluvial Land, Bowmansville Series, Lansdale Series, and Urban Land.

The Abbottstown Series consists of deep, nearly level to sloping soils on uplands. They are formed at the base of slopes, on side slopes, and on broad ridge tops in loamy material weathered from red and brown shale and sandstone.

Alluvial land appears on the floodplains of small streams. Moderate stands of moisture tolerant trees occur in some areas of Alluvial land.

Bowmansville Series consists of deep, poorly drained, nearly level soils on floodplains. The Bowmansville Series forms along small meandering streams in loamy alluvium that washed from upland soils underlain by shale and sandstone.

Lansdale Series consists of deep, well-drained, soils on uplands. These soils occur on side slopes and ridges, and form loamy material weathered chiefly from brown and yellow-brown shale and sandstone.

Most areas of Urban Land have been graded, and the original soil material and structure have been disturbed, filled over, or otherwise destroyed. Urban land appears in highly developed areas of Bucks County.

Hydrogeology

The primary porosity and associated permeabilities of the Lockatong and Brunswick Formations are very low. However, the development of fractures in the bedrock can increase permeability through secondary porosity. The Lockatong Formation is utilized as an aquifer for residential and commercial purposes throughout Bucks County, including the Site vicinity.

The capacity of the Lockatong Formation to store and transmit water is very low. Yields of 31 wells within a 1/2 mile of the Site ranged from 5 to 90 gallons per minute ("gpm") with an average yield of 17 gpm. Greenman (1955) reported the yields for 43 wells that tap the Lockatong Formation. Yields for these wells ranged from 2 gpm to 25 gpm, with an average yield of 10 gpm.

Surface Drainage

The Site is primarily drained by the east and west tributaries to Rapp Creek. The tributaries converge in the southeast portion of the Site and discharge to Rapp Creek approximately 300 feet beyond the Site boundary. Rapp Creek flows into Tinicum Creek, which in turn empties into the Delaware River. The Delaware River is approximately four miles from the Site.

Ground water Investigation

The hydraulic conductivity of the bedrock aquifer at the Site is primarily controlled by fractures and is relatively low. Ground water flows from the northwest corner of the Site, downslope to the unnamed tributaries. Shallow ground water from the south and east portions of the Site (spray fields) also flows toward the onsite tributaries. Shallow ground water from the northwest corner and the south and east

portions of the Site converges at the tributaries and discharges to the creek. Deeper ground water may flow beneath the creek.

Shallow and deep ground water flowing beneath the Site are separated by a series of black unfractured shale beds. These beds occur at around 100 feet below ground surface and cause the ground water flow to behave as two systems. Ground water in the deeper flow system is not affected by the presence of the tributaries. Flow in the deeper system is to the southeast. (See Figure 3)

There are eleven on-site monitoring wells. Based on the effect of well modification during Phase II, unfiltered ground water data collected during Phase II is not considered representative of Site ground water quality with regard to metals concentrations. Therefore, this data was not used for risk assessment purposes and is not reported below. However, the RI Report and the Administrative Record contain all of this analytical data.

Trichloroethylene ("TCE") was detected in the following shallow monitoring wells during the four quarterly ground water sampling events: MW4, MW-2, MW-7 and MW-12. The greatest TCE concentrations were detected in samples collected from MW-4. Concentrations in MW-4 ranged from 44 ug/l to 170 ug/l. Each of these monitoring wells is situated downgradient of areas where the greatest VOC concentrations were detected in soil. These wells were all completed at a depth above the unfractured black shales.

The B/N compound, 1,2,4-trichlorobenzene ("TCB"), was detected in only MW-4 at concentrations ranging from 41 ug/l to 150 ug/l. 1,2dichlorobenzene was detected in only MW-4 at concentrations ranging from 3 ug/l to 5 ug/l.

TCE and TCB concentrations in ground water at the Site appear to be limited to the northwest portion of the process area. Neither TCE nor TCB were detected in any of the four quarterly ground water samples collected during the Phase II RI from monitoring wells MW-11, MW-5 & MW-10. These wells were all completed at a depth below the black shales.

Bis(2-ethylhexyl)phthalate ("BEHP") was detected in the following wells: MW-2, MW-5, MW-8, MW-10, MW-11, and MW-12 at concentrations ranging from 3 ppb to 42 ppb.

Infrequent detection of the organic compounds acetone, methylene chloride, and carbon disulfide in the monitoring wells sampled does not indicate that the Site is a source of these compounds. The detected organic compounds acetone and methylene chloride are common laboratory contaminants and/or were detected in blank samples (i.e., control samples used to determine if contaminants are originating from sources, e.g., laboratory other than the sampled media).

No pesticides, PCBs, or acid extractable organic compounds ("AEs") were detected in any of the onsite ground water samples.

TCE and 1,1,1-trichloroethane ("1,1,1-TCA") were detected in one offsite residential well south of the Site during round one ground water sampling at estimated concentrations of 2 ug/l and 3 ug/l, respectively. These concentrations are below federal Safe Drinking Water Act ("SDWA") maximum contaminant levels ("MCLs") for TCE (5 ug/l) and 1,1,1-TCA (200 ug/l). TCE was also detected in round four ground water samples collected from an offsite residential well north of the Site at 0.397 ug/l and at an offsite residential well west of the Site on the south side of Route 611 at a concentration of 0.422 ug/l. Each of these concentrations is less than the MCL for TCE.

Although trace amounts of TCE were detected offsite, ground water elevation data obtained for residential wells in the Site vicinity and the results of a ground water elevation study conducted in the Site vicinity by the United States Geological Survey ("USGS") indicate that the Site is hydraulically downgradient of the residential wells that were subject to ground water sampling and analyses during the Phase II RI. Therefore, it is concluded that constituent concentrations detected in residential well water samples are not attributed to the Site.

With the exception of lead that was detected in the filtered ground water sample collected from an offsite residential well north of the Site during round one sampling, none of the metals or hexavalent chromium concentrations detected exceed MCLs in either the round one or round four filtered ground water samples collected from the residential wells.

Lead was detected in filtered ground water samples ranging from .75 ug/l to 18.10 ug/l. The highest filtered sample detection occurred in MW-5 in round one only. The proposed MCL is 15 ug/l. The analytical detections of lead in the filtered ground water samples were anomalous in that for each round of sampling the detection of lead occurred in a different monitoring well.

Arsenic was detected in ground water in concentrations ranging from 9 ug/l to 46.6 ug/l. The MCL for arsenic

is 50 ug/l.

No VOCs, Aes, B/Ns, or PCBs were detected in the Cotner ground water sample collected during round one. Lead was detected at a concentration that exceeded the MCL in the unfiltered ground water sample collected from the Cotner well during round one. No metals were detected above MCLs in the filtered samples.

Surface Water and Sediment

Several of the organic constituents detected in surface water and sediment exceeded levels detected in background samples. Copper, chromium and mercury were detected in tributary sediment. Copper and manganese were detected in surface water samples at concentrations that exceed their corresponding background level. Mercury was not detected in background sediment samples. The aquatic community survey indicated that the benthic community in the east and west tributaries at the Site adjacent to the process area had been adversely impacted. There is a rebound in the benthic community as distance from the process area increases. Table 14 is a comparison of inorganic analytical results of surface water samples to background surface samples. Table 15 is a comparison of inorganic analytical results of sediment samples to background sediment samples. Figure 4 shows the location of the surface water and sediments samples. Table 16 is a comparison of the analytical results for surface water toxicity samples to Pennsylvania Water Quality Criteria for where the criteria were exceeded.

Solid Waste

As a result of the extensive excavations performed, it is unlikely that additional drums remain beneath the Site in the areas of magnetic anomalies investigated, with the exception of the vicinity of the former Storage Lagoon C. Poor field conditions and the thickness (up to 15 feet) of the overburden had precluded further investigation and removal during the Phase II RI field work.

There are two solid waste refuse piles in the process area that include household appliances, trash, abandoned automobiles, wood and scrap metal. See Figure 5 for location.

Process Building and Septic Tank/Dry Well Investigations

Chrysotile asbestos was detected in samples collected from the corrugated material covering the process building, the shingle pile, and the white the material covering aboveground storage tank ("AST") 1.

There are three ASTs inside the process building and a dust collector. None of the ASTs or the dust collector contained liquids. The solid material collected from AST 1, AST 3, and AST 4 contained VOCs, B/Ns, TAL metals, and cyanide. The solid material collected from AST 1 also contained Aes and PCBs.

The liquid sample collected from the septic tank contained VOCs. Metals were detected in the liquid samples collected from the septic tank and dry well. VOCs, B/Ns, and metals were detected in the solid sample collected from the septic tank.

VI. SUMMARY OF SITE RISKS

An assessment of the potential risks posed to human health and the environment was completed in accordance with the NCP [40 C.F.R. 300.430(d)]. This section of the ROD discusses the results of the baseline risk assessment. The results of the baseline risk assessment are used to determine whether remediation is necessary, to help provide justification for performing the remedial action and to assist in determining what exposure pathways need to be remediated.

A. HUMAN HEALTH RISK EVALUATION

The potential human health risks posed by a Superfund Site if no remedial action is taken are calculated in a baseline risk assessment.

In general, a Site poses a potential human health risk if 1) the contaminants at the Site may cause cancer or some other health effect at existing levels, 2) there is a route or pathway through which a receptor may be exposed, e.g., ingestion of contaminated soil, and 3) there is a receptor which is exposed, e.g., a child ingesting soil. In a baseline human health risk assessment, the contaminants are evaluated, the exposure routes are characterized and the receptors are identified.

The Site is not currently occupied. Persons potentially at risk include offsite residents, trespassers, future onsite workers and future residents.

Exposure Assessment

Current land use in the vicinity of the Site is residential, commercial and agricultural. Current onsite land use is industrial based on current zoning. Future onsite land use is assumed to be residential for risk assessment purposes. Ground water beneath the Site is classified as a Class IIA aquifer, a current source of drinking water. Numerous residential wells in the area of the Site are used for drinking water and other domestic uses.

The exposure assessment identified potential exposure pathways. Four exposure scenarios were examined under current and future land use assumptions. Exposure of receptors to chemicals in potentially impacted media (surface soil, ground water, and air) were examined under Reasonable Maximum Exposure ("RME") assumptions. For purposes of the risk assessment, the Site was subdivided into three major areas for evaluating the surface soil data:

- The Process Area
- The East Spray field
- The South Spray field.

Samples were grouped in these three areas for purposes of calculating summary statistics (mean and upper confidence limits). These groupings correspond to the subdivision of the Site during the RI and allow an estimation of risks based on the reported uses of different areas of the Site. The scenarios were: 1) onsite trespasser - Process area, East Spray field, and South Spray field; 2) offsite residents under the current land use assumption; and 3) onsite resident under the future land use assumption. EPA performed additional calculations to evaluate the risk posed to a future onsite worker. The analytical results for samples collected from monitoring wells were used in the future land use exposure scenarios.

Use of an exposure scenario based on future residential use is consistent with EPA Risk Assessment Guidance which requires consideration of hypothetical residential use. The NCP requires that ground water which is suitable for use as a water supply be protected and restored to its beneficial use.

Potential exposure pathways considered for the purpose of evaluating Site risks included: ingestion, dermal contact and vapor inhalation of contaminated ground water; inhalation of volatiles and particulates in air; and ingestion and dermal contact with surface soil. The potential exposure pathways for current and future land use scenarios are presented in Tables 4 and 5.

The next step in the exposure assessment process involved the quantification of the magnitude, frequency, and duration of exposure for the populations and exposure routes selected for evaluation. The contaminant intake equations and intake parameters were derived from standard literature equations and data from EPA guidance documents. Average Daily Doses ("ADD") and Lifetime Average Daily Doses ("LADD") were estimated for contaminants of concern in the baseline risk assessment.

Toxicity Assessment

The Reference Dose ("RfD") for a substance represents the level of intake which is unlikely to result in adverse non-carcinogenic health effects in individuals exposed for a chronic period of time. For carcinogens, the slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen.

Risk Characterization

The baseline risk assessment in the RI/FS quantified the potential carcinogenic and non-carcinogenic risks to human health posed by contaminants of concern in several exposure media. The carcinogenic and non-carcinogenic risks were determined for soil, air and ground water.

Carcinogenic risk is presented as the incremental probability of an individual contracting some form of cancer over a lifetime as the result of exposure to the carcinogen. Risk standards for non-carcinogenic compounds are established at acceptable levels and criteria considered protective of human populations from the possible adverse effect from human exposure. The ratio of the ADD to the RfD values, defined as the hazard quotient, provides an indication of the potential for systemic toxicity to occur. If the sum of the aggregate hazard quotients does not exceed one, there is not a concern for a non-carcinogenic public health threat. The carcinogenic risks for each of the exposed populations are summarized in Tables 6, 7, 8 and 9.

The non-carcinogenic risks are summarized on Tables 10, 11, 12, and 13. Tables are not included for future onsite worker risks. The risk evaluation of the Site indicated the following:

Because the hazard quotients exceeded 1 and the baseline carcinogenic risk exceeds the risk range of 10[-4] to 10[-6], remedial action will be taken at this Site.

The principal risk analysis results for the Revere Site are summarized below. The exposure pathways providing the greatest contribution to estimated health risks were soil ingestion and dermal contact with soil.

Current Land Use

The excess lifetime cancer risk for offsite residents currently exposed to contaminants in soil via inhalation of dust is 2 x 10[-6] (or 2 in 1,000,000).

The excess lifetime cancer risk for a Site trespasser in the Process area is 2 x 10[-6] (or 2 in 1,000,000). The exposure pathways assumed are soil ingestion, and dermal contact with soil and inhalation.

The excess lifetime cancer risk for a Site trespasser in the East Spray field is 2 x 10[-8] (or 2 in 100,000,000). The exposure pathways assumed are soil ingestion and inhalation.

The excess lifetime cancer risk for a Site trespasser in the South Spray field is 2 x 10[-8] (or 2 in 100,000,000). The exposure pathways assumed are soil ingestion and inhalation.

The hazard quotient calculated for each exposure scenario is greater than 1.0 for estimated lifetime non-cancer effects. The highest hazard quotients are associated with the inhalation of chromium.

Future Land Use

The excess lifetime cancer risk for a future onsite resident is 2 x 10[-4] (or 2 in 10,000). The exposure pathways include soils ingestion, dermal contact with soil, ingestion of ground water, dermal contact with ground water, inhalation of VOCs from ground water, and ingestion of garden fruits and vegetables from an onsite garden.

The excess lifetime cancer risk for a future onsite worker is 7 x 10[-6] (or 7 in 1,000,000). The exposure pathways assumed are soil ingestion and inhalation.

The hazard quotient calculated for each exposure scenario is greater than 1.0 for estimated lifetime non-cancer effects. The highest hazard quotients are associated with the inhalation of chromium in dust and the ingestion of copper through consumption of garden fruits and vegetables grown in contaminated soil.

The hazard quotient for chromium exceeds 1.0 for inhalation exposures associated with all scenarios. The concentration of chromium in soil was measured as total chromium. Exposures to chromium were evaluated using a reference dose based on hexavalent chromium, the most toxic species. Therefore, it is likely that risks associated with inhalation of chromium have been overestimated.

Environmental Risk

Based upon consultation with State and Federal agencies knowledgeable about threatened or endangered species in the Commonwealth of Pennsylvania, EPA has determined that endangered species or sensitive habitats are near the Site. The endangered floral species Tomanthra auriculata (false foxglove) was identified in the South Spray field. Two types of wetlands, Riverine and Palustrine, have been identified at the Site. Riverine wetlands are limited to the east and west tributaries. Palustrine wetlands, including open water, emergent, scrub-shrub and forested wetlands are found in the northeast corner of the Site or in the South Spray field.

The contaminant of most concern for environmental risk is mercury. The northernmost contamination zone within the East Spray field contains up to 6.5 ppm, and soils in the southernmost area contain 30 ppm. The South Spray field also contains extensive areas of mercury contamination throughout the delineated wetland areas and near the eared false foxglove plants, at concentrations ranging up to 2.5 ppm. These concentrations represent significant contamination compared to the background soils collected, which contained no mercury (detection limit 0.1 ppm).

Because of the proximity of the wetland areas to the contaminated areas of the South Spray field, the environmental risk associated with these levels of mercury in soils is expected to be of concern. Mercury contamination of soils could provide a significant food chain pathway to migratory birds due to feeding on earthworms exposed to soils containing mercury.

In assessing environmental risk, EPA did not rely solely on the conclusions of the RI report because the Agency believes the technical conclusions of the RI were limited in scope. Further the "weight-of-evidence" on mercury toxicity from the literature was not considered in the RI and is necessary to evaluate environmental risks. In particular, EPA has relied upon information in the Administrative Record from the scientific community (see "Mercury hazards to fish, wildlife and invertebrates: a synoptic review" by R. Eisler and "Accumulation of methylmercury in the earthworm, Eisenia foetida, and its effect on

regeneration" by W.N. Beyer, E. Cromartie and G.B. Moment), as well as upon information from the U.S. Department of Interior ("DOI"). DOI recommends a cleanup standard of 0.1 ppm based on no mercury detected in background samples.

Actual or threatened releases of hazardous substances from this Site, if not addressed by the preferred alternative or one of the other remedial measures considered, present a current or potential threat to public health, welfare, and the environment.

VII. DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

In accordance with Section 300.430 of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR 300.430, a list of remedial response actions and representative technologies was identified and screened to determine whether they would meet the remedial action objectives at the Site. EPA seeks to eliminate, reduce, or control risks to human health and the environment. EPA expects to include both treatment to minimize the threat posed by highly mobile wastes and containment to control low-level threats. EPA expects to use treatment to address the principal threats posed by a site, wherever, practicable. Principal threats for which treatment is most likely to be appropriate include liquids, areas contaminated with high concentrations of toxic compounds, and highly mobile materials. The principal threat at the Site is the VOC contaminated soils. Using the MCL for TCE in conjunction with its partitioning properties and modeling conducted during the RI, Organic Hot Spots are defined for VOCs as areas where the concentration of VOCs in the soils exceeds 22.8mg/kg.

Section 121(d) of CERCLA requires that remedial actions at CERCLA Sites attain legally applicable or relevant and appropriate federal and State standards, requirements, criteria and limitations which are collectively referred to as "ARARs", unless such ARARs are waived under CERCLA Section 121(d)(4). Applicable requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under federal or State law that specifically address hazardous substances found at the Site, the remedial action to be implemented at the Site, the location of the Site, or other circumstances present at the Site. Relevant and appropriate requirements are those substantive environmental protection requirements, criteria or limitations promulgated under federal or State law which are not applicable to the hazardous materials found at the Site, however, the Site problems are sufficiently similar such that their use is wellsuited to the Site. ARARs may relate to the substances addressed by the remedial action (chemical-specific), to the location of the Site (locationspecific), or to the manner in which the remedial action is implemented (actionspecific). The Feasibility Study ("FS"), dated July 1993, discusses the alternatives evaluated for the Site and provides supporting information leading to alternative selection by EPA.

It should be noted that all cost, time frames and waste/treatment volumes indicated below are estimates based on the RI/FS and the Administrative Record for this Site. This information will be further refined for the selected remedial alternatives during the remedial design.

Nine remedial alternatives were identified as possible response actions for the Site soil and solid waste. Table 17 lists the remedial alternatives and provides information on estimated costs.

Common ARARs:

The ARARs listed below are common to Alternatives S2 through S9. Alternative S1 is a no action alternative, therefore there are no ARARs.

Offsite treatment, storage, and disposal of hazardous substances will comply with RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities, in accordance with 25 PA Code Chapter 264, Subchapters A-E, Subchapter I (containers), and Subchapter J (tanks).

RCRA regulations for the generation and transportation of hazardous wastes (25 PA Code Chapter 262, Subchapters A, B and C, and Chapter 263) and the Department of Transportation Rules for Hazardous Materials Transport (49 C.F.R. Parts 107 and 171-179) are applicable to the offsite disposal of drums and solid waste.

The Endangered Species Act of 1973, 16 U.S.C. [Para]1651 et seq., may be applicable if a determination is made that endangered species will be affected by Site remediation.

The following Residual Waste Regulations are relevant and appropriate for all alternatives which include capping: Standards for cap, final cover and grading: 25 PA Code [Para][Para] 288.234, 288.436, and Appendix A Table II; Standards for revegetation: 25 Pa Code [Para][Para] 288.236 and 288.237; Standards for water quality protection: 25 PA Code [Para][Para] 288.241 and 288.44; Standards for ground water monitoring: 25 Pa Code [Para][Para] 288.251, 288.254, and 288.257.

Regulations for onsite handling and removal of asbestos at 40 CFR Part 61, Subpart M [Para][Para] 61.141,

61.145, 61.149(c) & 61.156 are applicable to Alternatives S2 through S9.

The Toxic Substances Control Act ("TSCA") of 1976, 15 U.S.C. [Para][Para] 2601 to 2671, establishes regulations at 40 C.F.R. Part 761.60, Disposal Requirements; 761.65, Storage for Disposal; 761.207, General Manifest Requirements.

Implementation of dust controls and erosion and sedimentation controls during capping and regrading will comply with PADER's Chapter 102 regulations as explained in the EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL dated April 1990 (as authorized under the Clean Streams Law, 35 P.S. [Para] 691.202 et. seq.)

Fugitive dust emissions generated during remedial activities will be controlled in order to comply with fugitive dust regulations in the federally-approved State Implementation Plan for the Commonwealth of Pennsylvania, 25 PA Code [Para][Para] 123.1 - 123.2, and will not violate the National Ambient Air quality Standards for particulate matter, 40 C.F.R. [Para][Para] 50.6 and 25 PA Code [Para][Para] 131.1 through 131.4.

The ARARs listed below are common to Alternatives S3, S6, S7, S8 and S9.

National Primary and Secondary Ambient Air Quality requirements, 40 C.F.R. 50 et seq., are applicable and must be met for the discharge of contaminants into the air. Pennsylvania's Air Pollution Control Act is also applicable, as are Pennsylvania's Air Pollution Control Regulations at 25 Pa. Code [Para][Para] 121.1, 121.2, 121.7. 121.8 - General Provisions, Part 123 - Standards for Contaminants; and 127.1, 127.11. 127.12(a)(5) Construction, Modification, Reactivation and Operation of Sources.

The requirements of Subpart AA (Air Emission Standards for Process Vents) of the Federal RCRA regulations set forth at 40 CFR Part 264, Subpart AA are relevant and appropriate depending on the level of organics in the contaminated soil. These regulations require that total organic emissions from the air stripping process vents must be less than 1.4 kg/hr (3 lb/hr) and 2800 kg/yr (3.1 tons/yr).

25 Pa. Code [Para] 123.31 prohibits the emission of malodorous contaminants from crossing the property line.

25 Pa. Code [Para] 127.11 will apply. These Commonwealth of Pennsylvania regulations require a plan for approval for most air stripping and soil venting/decontamination projects designed to remove volatile contaminants from soil, water, and other materials regardless of emission rate.

25 Pa. Code [Para] 127.12(a)(5) will apply to new point source air emissions that result from implementation of the remedial alternatives listed above. These Commonwealth of Pennsylvania regulations require that emissions be reduced to the minimum obtainable levels through the use of best available technology ("BAT") as defined in 25 PA. Code [Para] 121.1.

ALTERNATIVE S1: NO ACTION/INSTITUTIONAL CONTROLS

Estimated Capital Cost: $0
Estimated Annual O&M Costs: $132,915
Estimated Present Worth: $2,176,144
Estimated Construction Time: none

The NCP requires that EPA consider a "No Action" alternative for each site to establish a baseline for comparison to alternatives that do require action. For the Revere Site, this alternative provides only for maintaining the current conditions at the Site and routine monitoring activities in order to provide information on changes in Site conditions. The use of institutional controls would not require modifications but, would limit access to the Site through the use of fencing and deed restrictions.
Long-term monitoring and a five-year review program would be required.

There are no ARARs associated with a No Action Alternative.

ALTERNATIVE S2: EROSION CONTROL CAP/OFFSITE SOLID WASTE DISPOSAL

Estimated Capital Cost: $3,769,656
Estimated Annual O&M Costs: $161,655
Estimated Present Worth: $6,254,843
Estimated Construction Time: 12 months

Under this alternative, the solid waste refuse piles in the Process area which include household appliances, trash, abandoned automobiles, wood, and scrap metal and the contents of the aboveground storage tanks (See Figure 5) would be sampled and analyzed for waste characterization and disposed offsite at an EPA-approved facility. Buried drums may still exist in the vicinity of former Storage Lagoon C (Figure 2). Any buried

drums would be excavated, characterized, and transported to an EPA-approved facility for disposal.

The asbestos would be removed from the sides of the Process Building by a licensed asbestos remediation contractor. Asbestos-containing material ("ACM") surrounding one of the aboveground storage tanks inside the Process Building and the shingle debris pile adjacent to the Process Building would also be removed by a licensed asbestos remediation contractor. The contents, if any, of the Process Building's aboveground tanks would be removed, packaged, sampled, and analyzed. Based on the results of the analysis, this material would be properly disposed offsite at an EPA approved facility.

Following removal of the solid wastes, all areas in the process area and the spray fields where soils exceed any of the following criteria would be covered with an erosion control cap: the hazard index for exposure to contaminated soils exceeds 1; exposure to contaminated soils represents a carcinogenic risk greater than 1 x 10[-4]; and the soils contain leachable contaminants that will leach to levels above the method detection limits for those contaminants using Drinking Water Analytical methods as described in Tables 18 and 19. Subgrade preparation would be completed by grading the Site to control surface water run-on and run-off thereby controlling erosion. Common fill, at least 12 inches thick, would be placed over the area to be capped and covered with 6 inches of top soil. Drainage swales would be lined where necessary to prevent washout. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site.

Solid waste disposal can be accomplished within approximately nine months after the approval of the alternative. The erosion control cap can be completed within 12 months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation on the cap. Long-term monitoring and a five year-review program would be required.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all common ARARs described except the Standards for Cap under the landfill closure requirements of the Pennsylvania Residual Waste Regulations.

ALTERNATIVE S3: EROSION CONTROL CAP/CLAY CAP-SLURRY WALL/VACUUM EXTRACTION/OFFSITE SOLID WASTE DISPOSAL

Estimated Capital Cost: $5,240,466
Estimated Annual O&M Costs: $161,655- 944,038
Estimated Present Worth: $9,122,139
Estimated Construction Time: 21 months

This alternative includes the removal and offsite disposal of the solid waste as described in Alternative S2. After removal of the solid waste from the Site, a slurry cutoff wall will be installed around Collection Basins AA and BB, where concentrations of TCB are defined as a TCB Hot Spot. A TCB Hot Spot is an area where the soil concentration of TCB exceeds 4,437 mg/kg. The slurry cutoff wall will isolate the TCB Hot Spot areas of the Site soil containing TCB which may potentially come into contact with horizontally migrating ground water. Following installation of the slurry cutoff wall, Collection Basins AA and BB will be covered with a clay cap (See Alternative S4 for a description of a clay cap). Following the removal of the solid waste, all areas in the Process Area and the Spray fields where the concentration of contaminants exceed any of the following criteria will be covered with an erosion control cap as described in Alternative S2: the hazard index for exposure to contaminated soils exceeds 1; exposure to contaminated soils represents a carcinogenic risk greater than 1 x 10[-4]; the soils contain leachable contaminants that will leach to levels above the method detection limits for those contaminants using Drinking Water Analytical methods as described in Tables 18 and 19. Additionally, vacuum extraction ("VE") systems would be installed in the areas of the Site where the concentration of total VOCs in soil exceeds 22.8 mg/kg. Under this alternative, VE wells would be installed below grade in the areas of concern. The organic constituents in the subsurface will volatilize and be drawn to the extraction wells because of the induced vacuum. The vapor discharge from the VE system would pass through an off-gas treatment unit, such as vapor-phase GAC or a thermal treatment unit, to reduce contaminant concentrations in the air stream to acceptable levels prior to discharge. When the VE systems are removed from the Site, any intrusions into capped areas will be repaired.

Solid waste disposal can be accomplished within approximately nine months. Clay cap and slurry cutoff wall installation can be completed within 3 months, and the erosion control cap can be completed within approximately twelve months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation of the cap. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site; long-term monitoring and a five-year review program would be required.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all common ARARs described except the Standards for Cap under the landfill closure requirements of the Pennsylvania

Residual Waste Regulations.

ALTERNATIVE S4: CLAY CAP/SLURRY WALL/OFFSITE SOLID WASTE DISPOSAL

Estimated Capital Cost: $7,780,510
Estimated Annual O&M Costs: $161,655
Estimated Present Worth: $10,265,697
Estimated Construction Time: 15 months

This alternative includes the removal and offsite disposal of the solid waste as described in Alternative S2. After removal of the solid waste from the Site, a slurry cutoff wall will be installed around Collection Basins AA and BB as described in Alternative S3. Following installation of the slurry cutoff wall, the process area and isolated areas in the spray fields would be covered with a clay cap or equivalent to achieve a 10[-7] permeability or less in areas that exceed the criteria set forth in Alternative 3. Subgrade preparation would be completed by grading the Site to control surface water run-on and run-off thereby controlling erosion. Compacted clay would be placed over the areas to be capped. A sand drainage layer would be placed over the clay. The sand drainage layer would be covered with 18 inches of common fill and 6 inches of top soil.

Solid waste disposal can be accomplished within approximately nine months. Slurry cutoff wall installation can be completed within 3 months, and the clay cap can be completed within approximately twelve months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation of the cap. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site; long-term monitoring and a five-year review program would be required.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all ARARs.

ALTERNATIVE S5: IMPERMEABLE CAP/SLURRY WALL/OFFSITE DISPOSAL

Estimated Capital Cost: $11,249,062
Estimated Annual O&M Costs: $167,415 - 179,395
Estimated Present Worth: $13,834,050
Estimated Construction Time: 15 months

This alternative includes the removal and offsite disposal of the solid waste as described in Alternative S2. Following its removal, a slurry cutoff wall will be installed around Collection Basins AA and BB, where TCB concentrations are defined as an TCB Hot Spot. A TCB Hot Spot is an area where the soil concentration of TCB exceeds 4,437 mg/kg. Following completion of the slurry walls, the Process Area and isolated areas in the Spray fields would be covered with an impermeable cap in areas that exceed the criteria set forth in Alternative S3. Subgrade preparation would be completed by grading the Site to control surface water run-on and run-off above the cap to the adjacent tributaries of Rapp Creek. A geotextile filter fabric and flexible membrane liner would be placed over the areas to be capped and a sand drainage layer would be installed over the geomembrane. A second membrane would be laid on top of this drainage layer and covered by a 12-inch coarse sand layer. This sand layer would be covered with a geotextile fabric. Finally, the entire membrane system would be covered with 18 inches of common fill and 6 inches of topsoil and then vegetated.

Solid waste disposal can be accomplished within approximately nine months. Slurry cutoff wall installation can be completed within 3 months, and the impermeable cap can be completed within approximately twelve months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation of the cap. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site; long-term monitoring and a five-year review program would be required.

The ARARs listed above as common ARARs are applicable to this Alternative. This alternative will meet all ARARs.

ALTERNATIVE S6: CLAY CAP/SLURRY WALL/VACUUM EXTRACTION/OFFSITE DISPOSAL

Estimated Capital Cost: $8,230,671
Estimated Annual O&M Costs: $161,655 - 620,552
Estimated Present Worth: $11,152,894
Estimated Construction Time: 21 months

This alternative includes the removal and offsite disposal of solid waste as described in Alternative S2. Following removal of the solid waste, a slurry cutoff wall will be installed around the areas of Collection Basins AA and BB as described in Alternative S3. The Process Area and certain areas of the Spray fields

would be covered with a clay cap as described in Alternative S4. Additionally, vacuum extraction ("VE") systems would be installed in the areas of the Site where the concentration of VOCs in soil exceeds 22.8 mg/kg. Under this alternative, VE wells would be installed below grade in the areas of concern. The organic constituents in the subsurface will volatilize and be drawn to the extraction wells because of the induced vacuum. The vapor discharge from the VE system would pass through an off-gas treatment unit, such as vapor-phase GAC or a thermal treatment unit, to reduce contaminant concentrations in the air stream to acceptable levels prior to discharge. When the VE systems are removed from the Site, any intrusions into capped areas will be repaired.

Solid waste disposal can be accomplished within approximately nine months. Slurry cutoff wall installation can be completed within 3 months, and the clay cap can be completed within approximately twelve months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation of the cap. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site; long-term monitoring and a five-year review program would be required.

The ARARs listed above as common ARARS are applicable to this Alternative. This alternative will meet all ARARs.

ALTERNATIVE S7: EROSION CONTROL CAP/LOW TEMPERATURE THERMAL STRIPPING/OFFSITE DISPOSAL

Estimated Capital Cost: $16,252,161
Estimated Annul O&M Costs: $161,655 - 869,005
Estimated Present Worth: $20,052,584
Estimated Construction Time: 36 months

This alternative includes the offsite disposal of solid waste at the Site as described in Alternative S2, excavation and treatment of the process area soil that contains total VOCs above the preliminary cleanup level in soil of 6.1 mg/kg and/or TCB above the preliminary cleanup level of 6,236 mg/kg by Low Temperature Thermal Stripping ("LTTS"), offsite disposal of treated soil, and installation of an erosion control cap as described in Alternative S2. For this alternative 6.1 mg/kg total VOCs and 6,234 mg/kg TCB was used to estimate the volume of contaminated soil to be treated. Actual cleanup levels are expected to be lower, which may increase cost and estimated construction time.

The LTTS involves treating an estimated 26,000 cubic yards or approximately 34,000 tons of contaminated soil. These estimates are based on the preliminary cleanup levels listed in the preceding paragraph and are subject to change. Costs are anticipated to increase based on the cleanup levels to be developed. Soil is fed into a dryer and heated to a temperature of 200 to 800 degrees Fahrenheit. An inert gas is introduced to strip the organic compounds from the soil, followed by a carbon adsorption unit or an incinerator to recover or destroy the organic compounds. The exhaust from the LTTS unit would contain detectable concentrations of organic emissions and particulate matter generated during processing operations. Each of these would be captured using an appropriate air treatment/control system.

Solid waste disposal can be accomplished within approximately nine months. Based on the preliminary cleanup levels for VOCs and TCB in soil, and an estimated throughput rate of 75 tons per day and assuming a 6 day a-week operation for the LTTS unit, the approximate time required to process the soil at the Site where organic constituents are present at concentrations that require remediation is 2 years. Final grading and cap installation would be performed after the completion of remedial measures and demobilization of the LTTS unit. The erosion control cap can be completed within approximately twelve months of the initiation of construction activities. Approximately 12 to 18 months would be required to establish vegetation of the cap. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site; long-term monitoring and a five-year review program would be required.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all common ARARs described except the Standards for Cap under the landfill closure requirements of the Pennsylvania Residual Waste Regulations.

ALTERNATIVE S8: LTTS/EROSION CONTROL CAP/ONSITE DISPOSAL

Estimated Capital Cost: $12,735,975
Estimated Annual O&M Costs: $161,655 - 869,005
Estimated Present Worth: $16,536,398
Estimated Construction Time: 30 months

Under this alternative an erosion control cap would be installed as described in Alternative S2. Soil containing VOCs and TCB in excess of the preliminary cleanup levels would be treated onsite by LTTS as described in Alternative S7. Solid waste would be treated onsite as required by applicable RCRA and Pennsylvania Solid Waste Regulations governing land disposal. Both the treated soil and the solid waste

would be disposed in a hazardous waste landfill cell constructed onsite.

A double-lined landfill cell with a leachate collection system and leak detection layer would be constructed to contain treated soil and solid waste. An area of approximately 6 acres would be required for installation of the cell.

After disposal operations are complete, the cell would be closed in accordance with the requirements and regulations for hazardous waste landfills promulgated by the Commonwealth of Pennsylvania.

Based on the preliminary cleanup levels for VOCs and TCB in soil, and an estimated throughput rate of 75 tons per day and assuming a 6 day a-week operation for the LTTS unit, the approximate time required to process the soil at the Site where organic constituents are present at concentrations that require remediation is 2 years. It is anticipated that the landfill cell can be constructed while the soil is being thermally treated. The entire alternative is estimated to be completed in 2 years, 6 months.
Institutional controls such as fencing and deed restrictions would be used to limit access to the Site.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all common ARARs described except the Standards for Cap under the landfill closure requirements of the Pennsylvania Residual Waste Regulations.

ALTERNATIVE S9: VACUUM EXTRACTION/SOIL STABILIZATION/EROSION CONTROL CAP/OFFSITE DISPOSAL

Estimated Capital Cost: $31,320,242
Estimated Annual O&M Costs: $161,655 - 1,286,226
Estimated Present Worth: $35,863,182
Estimated Construction Time: 48 months

This alternative includes offsite disposal of solid waste; vacuum extraction at locations in the process area where the concentration of VOCs in soil are defined as an Organic Hot Spot, i.e. concentration of VOCs exceeds 22.8 mg/kg; stabilization of inorganic compounds in process area soil; installation of an erosion control cap using the criteria set forth in Alternative S2; and installation of a slurry cutoff wall around the area containing TCB as described in Alternative S3. Solid waste disposal, VE, and erosion control capping have been discussed under Alternatives S2 and S3.

Surficial stabilization of the soil would be performed using either a backhoe or grout injectors for introducing and mixing the admixture in the soil. The cementitious mixture would be prepared in a specialized mixing apparatus, and transported to the areas undergoing stabilization. The actual time required for complete stabilization would be determined during the pre-design treatability studies and confirmed in the field during implementation. After the remediated areas have been stabilized to specifications, the erosion control cap would be installed. Institutional controls such as fencing and deed restrictions would be used to limit access to the Site.

Solid waste disposal can be accomplished in approximately nine months. The estimated time to complete soil stabilization is 2 to 3 years. The erosion control cap can be completed in approximately 12 months of initiation of construction activities.

The ARARs listed as common ARARs are applicable to this Alternative. This alternative will meet all common ARARs described except the Standards for Cap under the landfill closure requirements of the Pennsylvania Residual Waste Regulations.

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

The remedial action Alternatives described above for each area of the Site were evaluated under the nine evaluation criteria set forth in the NCP at 40 C.F.R. [Para] 300.430(e)(9). These nine criteria are organized according the following categories listed in 40 CFR [Para] 300.430(f)(1):

Threshold Criteria:

@Overall protection of human health and the environment
@Compliance with applicable or relevant and appropriate requirements (ARARs)

Primary Balancing Criteria:

@Long-term effectiveness and permanence
@Reduction of toxicity, mobility, or volume through treatment
@Short-term effectiveness
@Implementability

@Cost

Modifying Criteria:
@Community acceptance
@State acceptance

Threshold criteria must be satisfied in order for an alternative to be eligible for selection. Primary balancing criteria are used to weigh the strengths and weaknesses of the alternatives and to identify the alternative which provides the best balance of the criteria. State and community acceptance are modifying criteria which are taken into account after public comment is received on the Proposed Plan. Descriptions of the individual criteria follow:

Overall protection of human health and the environment:

Whether the remedy provides adequate protection and how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

Compliance with ARARs:

Whether or not a remedy will meet all applicable or relevant and appropriate requirements ("ARARs") of Federal and State environmental statutes and/or whether there are grounds for invoking a waiver. Whether or not the remedy complies with advisories, criteria and/or guidance that may be relevant.

Long-term effectiveness and permanence:

The ability of the remedy to afford long term, effective and permanent protection to human health and the environment along with the degree of certainty that the alternative will prove successful.

Reduction of toxicity, mobility or volume:

The extent to which the alternative will reduce the toxicity, mobility, or volume of the contaminants causing the site risks.

Short-term effectiveness:

The time until protection is achieved and the short term risk or impact to the community, onsite workers, and the environment that may be posed during the construction and implementation of the alternative.

Implementability:

The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement that remedy.

Cost:

Includes estimated capital, operation and maintenance, and net present worth costs.

State acceptance:

Whether the Commonwealth concurs with, opposes, or has no comment on the Preferred Remedial Alternative.

Community acceptance:

Whether the public agrees with the Preferred Remedial Alternative. This is assessed in the Record of Decision following a review of the public comments received on the Administrative Record and the Proposed Plan.

A. Comparative Analysis Of Alternatives

Overall Protection

As stated in the Summary of Site Risks section above, EPA has defined Organic Hot Spots in soil as areas where without treatment or containment the contaminants have the potential to cause ground water contamination above the drinking water regulations. S1 (No Action) would neither eliminate nor reduce to acceptable levels the threats to human health and the environment presented by the contamination at the Site. S2 (Erosion Control Cap) would provide less than adequate protection since no treatment would be used to reduce contaminant concentrations in soils to levels that would not impact ground water. Alternatives S1 and

S2 will not be discussed in the remainder of this analysis.

Alternatives S3 and S6 include measures to eliminate potential risks to human health and the environment by treating VOC contaminated soils and by containing TCB-contaminated soils and by disposing of solid waste present at the Site at a secure offsite facility. Alternative S6 provides a higher degree of protection of the environment than S3 since the cap will provide greater reduction of infiltration through the soil column thereby reducing potential risk to ground water.

As with Alternatives S3 and S6, Alternatives S4, S5, S7, and S9 include offsite disposal of solid waste at a secure offsite facility. Alternative S4 will limit the infiltration of precipitation as effectively as Alternative S6, however without treatment of the mobile VOCs in soils, S4 is less protective than S6. The S5 cap will provide a higher level of containment than Alternatives S3 and S6. Alternative S5 (Impermeable cap) provides the highest level of containment and will virtually eliminate precipitation and infiltration through the overburden soil column.

Alternatives S7 and S8 use LTTS to permanently reduce the concentration of TCE and TCB in soil. These alternatives provide the greatest level of reduction of TCB in soil through treatment and therefore are more protective than S3, S4, S5 and S6. Alternative S9 is the most protective in terms of controlling potential impacts to ground water from the inorganics in soil at the Site dependent upon the stability of the solidified matrix. Isolation of the stabilized soil under the erosion control cap would further reduce the potential for metals to impact ground water than the level of protection provided only by the erosion control cap under Alternatives S3, S7, and S8. Although the results of the metal partitioning study conducted during the RI indicate that metals are not significantly mobilized by precipitation infiltration, stabilization would further reduce the potential for metals to impact ground water.

S6 will provide effective reduction of infiltration through the overburden soil column. The VE extraction of organic hot spots and the use of a slurry wall to isolate the TCB from shallow ground water will further reduce potential risks to ground water to an acceptable level.

Compliance with ARARs

The alternatives which address soil contamination would attain all their respective ARARs with the following exceptions. Alternatives S3, S7, and S8, and S9 would not attain the closure requirements for a landfill under the Pennsylvania Residual Waste Regulations based on the permeability of the soil erosion control cap. In addition, S8 would not comply with the siting requirements for an onsite landfill due to the shallow depth to bedrock at the Site.

Long-Term Effectiveness and Permanence

Capping and slurry cutoff walls are effective long-term means of eliminating these exposure routes and resulting risks provided that the caps are maintained. Alternative S2 provides the lowest level of long-term effectiveness and permanence because it leaves all the organic contaminated soils in place without treatment and relies solely upon a soil erosion control cap. Alternative S5 is more effective than S2 because it employs an impermeable cap to prevent exposure but still does not employ treatment.
The impermeable cap will control infiltration to a greater degree than either a soil or a clay cap but would not reduce the toxicity of the contaminants. This alternative would only be reliable to mitigate impacts to ground water above drinking water levels if the cap is properly maintained. Alternatives S3, S6, and S9 use VE to permanently reduce TCE concentrations in subsurface soil to levels that will not impact ground water above MCLs. Alternatives S3, S4, S6 and S9 employ a clay cap and slurry cutoff wall to isolate TCB Organic Hot Spots from ground water thereby reducing risk to ground water from TCB. Since S4 and S6 employ a clay cap over the entire process area and selected areas of the spray fields these alternatives would have risk posed by exposure to contaminated soils. Alternative S7 and S8 use LTTS to control the source of organic contamination and require greater time to implement due to excavation activities. Alternative S9 is more complex than the other alternatives because of the soil stabilization component. S9 requires the longest time before risk from direct soil contact and ingestion is controlled.

Implementability

Alternatives S2, S4, and S5 would be the easiest to implement because no treatment of contaminated soils is involved. The construction techniques and equipment required to install the caps under all the capping alternatives are common and readily available. The quantity and types of solid waste present at the Site should not pose a problem in terms of available offsite disposal facility capacity. Alternatives S3, S6, S7, and S8 can be implemented fairly easily. VE and LTTS are established technologies requiring the mobilization of process equipment to the Site. The VE equipment is more readily available and easier to install and operate. VE is considerably less disruptive than LTTS and soil stabilization, therefore S6 is more easily implementable than S7, S8, and S9.

Costs

Capital and operation and maintenance costs are summarized in Table 17. The estimated present worth cost of the selected alternative is $11,152,894. This figure represents the "present worth value" of all future cost activities associated with the selected alternative as discussed in the Feasibility Study Report. This estimate is used for cost comparison purposes.

In summary, the preferred alternative is believed to provide the best balance of trade-offs among the alternatives evaluated with respect to the nine criteria above. Based on the information available at this time, EPA believes the preferred alternative would protect human health and the environment, would comply with ARARs and be cost-effective. In addition, permanent disposal options would be utilized to the maximum extent practicable.

Community Acceptance

The July 28, 1993 Proposed Plan and the August 12, 1993 public meeting produced a number of comments from the general public and the PRPs for the Site. Responses to these comments appear in the Responsiveness Summary Section of this ROD.

State Acceptance

The Commonwealth of Pennsylvania has indicated concurrence with the selection of Alternative S6 for Operable Unit One of this Site.

IX. THE SELECTED REMEDY AND PERFORMANCE STANDARDS

A. Selected Remedy for the Contaminated soil, solid waste and debris

Following review and consideration of the information in the Administrative Record file, the requirements of CERCLA and the NCP, and public comment, EPA has selected Alternative S6 for the treatment, and containment of contaminated soil and disposal of solid waste and debris. The main components of the Selected Remedy for this Operable Unit are:

- Offsite disposal of solid waste and debris
- Treatment of VOC-contaminated soil by vacuum extraction
- Source containment by slurry wall for TCB area
- Source containment by capping
- Fencing to prevent access to capped areas
- Site restoration by revegetation
- Deed restrictions
- Long-term ground water monitoring

This selected remedy differs from the Preferred Alternative described in the July 28, 1993 Proposed Plan in two respects; 1) EPA is deferring the selection of a ground water remedy until additional ground water data is gathered; 2) EPA is requiring additional samples be taken in the stream corridor. The goal of the additional hydrogeologic investigation is to provide information on the practicability of actively pumping ground water to achieve background cleanup levels, as well as to determine the expected rate of natural attenuation of contaminants in the aquifer after the organic hot spots have been remediated. The goal of requiring additional sampling in the stream bed corridor is to determine the extent of mercury contamination and to evaluate appropriate remediation options for the stream bed corridor.

1. Offsite disposal of solid waste and debris

A. Description of the Component of the Remedy

Under the remedy, the solid waste refuse piles 1 and 2 which include household appliances, trash, abandoned automobiles, wood and scrap metal (See Figure 5), and contents of the aboveground storage tanks shall be sampled, analyzed for waste characterization and disposed offsite at an EPA-approved facility. All buried drums shall be excavated, characterized, and transported and disposed at an EPA-approved disposal facility.

The asbestos will be removed from the sides of the Process Building by a licensed asbestos remediation contractor. Asbestos-containing material ("ACM") surrounding one of the above ground storage tanks inside the Process Building and the shingle debris pile adjacent to the Process Building will also be removed by a licensed asbestos remediation contractor. The contents, if any, of the Process Building aboveground tanks will be removed and packaged, sampled, and analyzed. Based on the results of the analysis, this material will be properly disposed offsite at an EPA-approved facility.

B. Performance Standards

All solid waste and debris found onsite and all excavated drums shall be removed from the Site and shall be evaluated in accordance with RCRA identification requirements set forth at 25 PA Code Chapter 261. Onsite handling of any wastes found to exhibit a characteristic of a hazardous waste shall comply with the substantive portions of the RCRA regulations that pertain to generators and transporters of hazardous waste set forth at 25 PA Code Chapters 262 and 263.

The removal and disposal of asbestos and asbestos containing material shall be in accordance with the requirements of the National Emission Standards for Hazardous Air Pollutants ("NESHAPs") set forth at 40 CFR Part 61, Subpart M and in particular [Para][Para] 61.141(c) and 61.145.

2. Treatment of VOC-contaminated soil

A. Description of the Component of the Remedy

This portion of the remedy consists of insitu vacuum extraction of VOCs from all soil in the entire process area (See Figure 2) which contains more than 22.8 mg/kg total VOC in the soil column from surface to bedrock. The process area is approximately 25 acres and is enclosed by a fence as shown in Figure 2. The vacuum extraction system includes a manifold system to pull air through the soil for treatment by means of carbon adsorption. Vacuum extraction will continue until the soil left in place meets the performance standard below.

B. Performance Standards

Indicator compounds for evaluation shall be chosen according to their presence and prevalence in the initial off gas, toxicity, and physical characteristics which would affect stripping rates. The system shall operate until nondetect levels or no significant removal<Footnote>1 The "no significant removal" levels will be determined by EPA based on evaluation of concentrations of constituents in the off gas and statistical analysis of mass of constituents extracted per unit time, rate of decline of mass extraction, and spike concentrations.

</footnote> levels of the determined indicator compounds have been demonstrated for three consecutive months and subsequent spike
<Footnote>2 "Spike" values refer to the initial concentrations displayed in off gas when the system is either started up initially or when the system is "pulsed" (restarted after being shut off for a period to allow the system to re-equilibrate).
</footnote> values reveal nondetect or no significant removal levels.

3. Construction of slurry wall

A. Description of the Component of the Remedy

A circumferential slurry cutoff wall will be constructed around the former Collection Basins AA and BB as shown in Figure 2. This vertical, physical barrier will be used to isolate the soil areas which exceed 4,437 mg/kg of TCB in the soil. This, in combination with the clay cap, will effectively isolate these soils by limiting vertical infiltration as well as horizontal migration of ground water.

B. Performance Standards

The slurry wall shall be constructed to have an in-place permeability of no greater than 1 x 10[-7] cm/sec. The trench shall be excavated an appropriate depth into the bedrock to prevent seepage under the wall. The slurry wall shall be tied into the clay cap. Predesign studies shall be performed prior to implementation to ensure contaminant compatibility with proposed slurry wall backfill. Detailed construction specifications shall be developed during the remedial design in accordance with EPA guidance
Slurry Trench Construction for Pollution Migration Control - EPA-540/2-84-001 Feb. 1984 and shall be subject to EPA approval.

A post-construction maintenance plan shall be developed to maintain the integrity and effectiveness of the slurry wall, including making repairs to the wall as necessary.

4. Construction of cap

A. Description of the Component of the Remedy

As part of the remedy, a clay cap or its equivalent which achieves a 10[-7] cm/sec permeability or less ("cap") shall be constructed in the process area and spray fields depicted in Figure 2. The cap shall be

constructed in the areas where the soils exceed any of the following criteria: the hazard index for exposure to contaminated soils exceeds 1; exposure to contaminated soils represents a carcinogenic risk greater than 1 x 10[-4]; or when using the Synthetic Precipitation Leaching Procedure, listed as EPA method 1312, the soils contain leachable contaminants that will leach to levels above the method detection limits for those contaminants using Drinking Water Analytical methods as described in Tables 18 and 19. These methods listed in Tables 18 and 19 are typically used to analyze drinking water. When using these methods to analyze the leachate, the actual method detection limits attainable may be higher than those listed in Tables 18 and 19.

The clay cap will prevent incidental contact with surficial soil, eliminate fugitive dust emissions, prevent wind and water erosion of soil from the Site and reduce both infiltration and percolation of precipitation through the soil contamination areas. Surface water diversion controls will be used in conjunction with the cap to control Site runoff and to divert overland flow of surface water away from the soil contamination areas, thus reducing the potential for erosion of the cap.

B. Performance Standard

The cap shall be constructed to meet the performance specifications applicable under 25 PA Code [Para][Para] 288.234, 288.236, 288.436,and Appendix A. These standards require, among other things, that the cover achieve a permeability of no more than 1 x 10[-7] cm/sec. Vegetation of the final cover shall meet the standards specified in 25 PA Code [Para][Para] 288.236 and 288.237, Standards for Revegetation. A post-construction maintenance plan shall be developed to ensure maintenance of the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.

5. Perimeter Fencing

A. Description of the Component of the Remedy

A perimeter fence has been erected around portions of the process area. If the existing fence must be removed during construction activities, a replacement fence must be erected upon completion. A chain-link fence shall be constructed around the perimeter of the capped areas in order to prevent unauthorized access. Plans for maintenance of the fence shall be included in a post-construction maintenance plan.

B. Performance Standard

The chain-link fence shall have a minimum height of six feet and shall be equipped with locking gates. The fence shall be maintained in a manner sufficient to prevent unauthorized access to the capped areas.

6. Site Restoration

A. Description of the Component of the Remedy

Site restoration shall include specific measures to promote wildlife habitat diversity without jeopardizing the integrity of the cap. Careful attention shall be paid to the selection of plant species (with emphasis on use of native grasses or vegetation indigenous to the area as well as those with food and cover values) and planting patterns. Use of such vegetation shall not preclude the use of annual grasses commonly used to quickly stabilize the cap soil. These aspects will be detailed in the remedial design. All planning activities associated with habitat restoration shall be performed in consultation with the U.S. Fish and Wildlife Service ("FWS").

B. Performance Standards

Standards for revegetation set forth at 25 Pa Code [Para][Para] 288.238 and 288.237 shall apply to stabilizing the Site soil with grasses etc.

7. Deed Restrictions

Deed restrictions shall be developed and submitted to EPA for approval. Once approved, these deed restrictions shall be placed in the deed to the Site by filing said restrictions with the Recorder of Deeds of the appropriate County Court. The deed restrictions shall protect the integrity of any structure now or hereafter built, installed, or otherwise placed on the Site for purposes of remediation of the Site. The deed restrictions shall also prohibit the use of ground water on the Site for as long as contamination remains onsite. The deed restrictions shall be valid and binding in the Township and Commonwealth in which the Site is located. At a minimum, the deed restrictions shall recite that no excavation, regrading or alteration of the Site, or any portion thereof, shall be conducted without the prior written approval of EPA. The continuing need for these restrictions shall be re-evaluated during the

Five-year Site reviews which are conducted under CERCLA Section 121(c), 42 U.S.C. Section 9621(c).

8. Ground Water Monitoring

A long-term ground water monitoring program shall be implemented to evaluate the protectiveness of the remedy. EPA shall determine the exact location of monitoring wells, residential wells and sampling points to be included in the monitoring program. The frequency and duration of sampling and the analytical parameters and methods to be used shall be subject to written approval by EPA.

Five-Year Review

Reviews shall be conducted no less than every five years after the initiation of the remedial action to ensure that the remedy continues to protect human health and the environment, unless otherwise directed by EPA.

X. STATUTORY DETERMINATIONS

Section 121 of CERCLA requires that a selected remedy:

@ be protective of human health and the environment;

@ comply with ARARs;

@ be cost-effective;

@ utilize permanent solutions and Alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and

@ address whether the preference for treatment as a principal element is satisfied.

A description of how the selected remedy satisfies each of the above statutory requirements is provided below.

A. Protection of Human Health and the Environment

The selected remedy for the Site will be protective of human health and the environment through: treatment of VOC contaminated soils to a level that will not affect ground water together with construction of a slurry cutoff wall around areas where TCB concentrations, unless contained, would affect ground water; capping of the process area and the spray fields to eliminate direct exposure pathways to contaminated soils; reduction of leaching of contaminants to ground water by reducing the transport mechanism for the Site contaminants to the aquifer; and elimination of the potential for erosion of contaminated soil in the East and West Tributaries of Rapp Creek.

Routine ground water and surface water monitoring near the Site will continue to ensure the detection of any contamination which might pose a threat to human health and the environment. None of the offsite residential wells evaluated presently exceed safe drinking water standards.

B. Compliance with Applicable or Relevant and Appropriate Requirements

All applicable or relevant and appropriate requirements (ARARs) pertaining to the selected remedy for the Revere Chemical Site pertaining to the selected remedy for the Revere Chemical Site will be attained. The ARARs are presented below.

Action Specific

Offsite treatment, storage, and disposal will comply with RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities, in accordance with 25 PA Code Chapter 264, Subchapters A-E, Subchapter I (containers), and Subchapter J (tanks).

National Primary and Secondary Ambient Air Quality requirements, 40 C.F.R. 50 et seq., are applicable and must be met for the discharge of contaminants into the air. Pennsylvania's Air Pollution Control Act is also applicable, as are Pennsylvania's Air Pollution Control Regulations at 25 Pa. Code [Para][Para] 121.1, 121.2, 121.7. 121.8 - General Provisions, Part 123 - Standards for Contaminants; and 127.1, 127.11. 127.12(a)(5) Construction, Modification, Reactivation and Operation of Sources.

The requirements of Subpart AA (Air Emission Standards for Process Vents) of the Federal RCRA regulations set forth at 40 CFR Part 264, Subpart AA are relevant and appropriate depending on the level of organics in the

contaminated soil. These regulations require that total organic emissions from the air stripping process vents must be less than 1.4 kg/hr (3 lb/hr) and 2800 kg/yr (3.1 tons/yr).

25 Pa. Code [Para] 123.31 prohibits the emission of malodorous contaminants from crossing the property line.

25 Pa. Code [Para] 127.11 will apply. These Commonwealth of Pennsylvania regulations require a plan for approval for most air stripping and soil venting/decontamination projects designed to remove volatile contaminants from soil, water, and other materials regardless of emission rate.

25 Pa. Code [Para] 127.12(a)(5) will apply to new point source air emissions that result from implementation of the remedial alternatives listed above. These Commonwealth of Pennsylvania regulations require that emissions be reduced to the minimum obtainable levels through the use of best available technology ("BAT") as defined in 25 PA. Code [Para] 121.1.

The following Residual Waste Regulations are relevant and appropriate for capping: Standards for cap, final cover and grading: 25 PA Code [Para][Para] 288.234, 288.436, and Appendix A Table II; Standards for revegetation: 25 Pa Code [Para][Para] 288.236 and 288.237; Standards for water quality protection: 25 PA Code [Para][Para] 288.241 and 288.244; Standards for ground water monitoring: 25 Pa Code [Para][Para] 288.251, 288.254, and 288.257.

Implementation of dust controls and erosion and sedimentation controls during capping and regrading will comply with Pennsylvania Department of Environmental Resources' Chapter 102 regulations as explained in the Erosion and Sediment Pollution Control Program Manual dated April 1990 (as authorized under the Clean Streams Law, 35 P.S. [Para] 691.202et.seq.).

Regulations for onsite handling and removal of asbestos at 40 CFR Part 61.141, Subpart M are applicable.

RCRA regulations for the generation and transportation of hazardous wastes (25 PA Code Chapter 262, Subchapters A and C, and Chapter 263) and the Department of Transportation Rules for Hazardous Materials Transport (49 C.F.R. Parts 107 and 171-179) are applicable to the offsite disposal of drums and solid waste.

The Toxic Substances Control Act ("TSCA") of 1976, 15 U.S.C. [Para][Para] 2601 to 2671, establishes regulations at 40 C.F.R. Part 761.60, Disposal Requirements; 761.65, Storage for Disposal; 761.207, General Manifest Requirements.

Fugitive dust emissions generated during remedial activities will be controlled in order to comply with fugitive dust regulations in the federally-approved State Implementation Plan for the Commonwealth of Pennsylvania, 25 PA Code [Para][Para] 123.1 - 123.2, and will not violate the National Ambient Air Quality Standards for particulate matter, 40 C.F.R. [Para][Para] 50.6 and 25 PA Code [Para][Para] 131.2 and 131.3.

This remedy will comply with the ground water monitoring requirements in 25 PA Code Chapter 264, Subchapter F.

Location Specific ARARS

This Alternative will comply with the provisions for protection of wetlands and flood plain management in 40 C.F.R. Parts 6 and 230 and 25 PA Code [Para][Para] 105.17-105.20(a). It will also comply with erosion control requirements related to excavation activities in 25 PA Code Chapter 102.

The Endangered Species Act of 1973, 16 U.S.C. [Para] 1651 et seq., may be applicable if a determination is made that endangered species will be affected by Site remediation.

To Be Considered ("TBC") Standards

The remedy for the Revere Chemical Site is expected to comply with the applicable portions of the PADER Ground Water Quality Protection Strategy, which prohibits continued ground water quality degradation, since treatment of the VOC-contaminated soil in conjunction with the cap is expected to meet ground water ARARs.

This remedy will comply with CERCLA [Para] 121(d)(3) and with EPA OSWER Directive #9834.11, both of which prohibit the disposal of Superfund Site waste at a facility which is not in compliance with [Para][Para] 3004 and 3005 of RCRA and all applicable State requirements.

Existing wells which serve no useful purpose will be properly plugged and abandoned consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11.

C. Cost-effectiveness

The selected remedy is cost-effective in providing overall protection in proportion to cost, and meets all other requirements of CERCLA. The NCP, 40 CFR [Para]300.430(f)(ii)(D), requires EPA to evaluate cost effectiveness by comparing all the alternatives which meet the threshold criteria - protection of human health and environment and compliance with ARARs - against three additional balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; and short-term effectiveness. The selected remedy meets these criteria and provides for overall effectiveness in proportion to its cost.

The estimated present worth cost for the selected remedy is $11,152,894. A cost estimate is present in Table 17.

D. Utilization of Permanent Solutions and Alternative treatment Technologies to the Maximum extent Practicable

The remedy selected provides the best balance of trade-offs among the alternatives evaluated with respect to the evaluation criteria. Of those alternatives evaluated that are protective of human health and the environment and meet ARARs, the selected remedy provides the best balance with regard to long-term and short-term effectiveness and permanence, cost, implementability, reduction in toxicity, mobility, or volume through treatment, and preference for treatment as a principal element.

Under the selected alternative, S6, the insitu vacuum extraction of VOCs from contaminated soils is a treatment technology which permanently reduces the toxicity, mobility and volume of VOCs in the soil. The capping of the Site to mitigate threats posed by metals-contaminated soils and the use of the slurry wall to contain TCB which is not amenable to vacuum extraction is consistent with Superfund program policy regarding principal and low level threat waste in that it utilizes engineering controls for low level threat waste.

E. Preference for Treatment as a Principal Element

The Selected Remedy satisfies, in part, the statutory preference for treatment as a principal element. The Selected Remedy addresses the primary threat of future direct contact, inhalation, and ingestion of contaminated ground water and exposure to VOC-contaminated soil through treatment of VOC-contaminated soils to levels that will not impact ground water. Since the metals-contaminated soil does not constitute a principal threat, treatment is not required.

XI. EXPLANATION OF SIGNIFICANT CHANGES

The following significant changes have been made to the Selected Remedy from the preferred alternative described in the Proposed Plan. The Proposed Plan presented the remedy for the Site as one operable unit that was a final remedy. EPA has separated the Site into two operable units. The Selected Remedy addresses contaminated soil which is defined as Operable Unit One. The Selected Remedy does not include a ground water component as described in the Proposed Plan. Operable Unit Two will address contaminated ground water and contamination in the stream corridor. EPA is deferring the selection of a remedy for Operable Unit Two until additional data is gathered and evaluated. This change was made in response to comments received by the Agency.

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Compound	MCL	CLP Protocol CRQL ug/l	Drinking Water Method Detection Limit(1) ug/l	Drinking Water Method Number(1)
Trichloroethylene	5	10	0.14	524.2
1,2,3-Trichlorobenzene			0.03	524.2
1,2,4-Trichlorobenzene		10	0.04	524.2
Bis(2-ethylhexyl) phthalate		10	0.6	525

<Footnote>
(1) The methods listed here are those used by the PADER Bureau of Laboratories for drinking water analyses. Detection limits listed are those published in the USEPA publication, "Methods for the Determination of Organic Compounds in Drinking Water", December 1988.
</footnote>

Analyte	MCL (SMCL) ug/l	CLP Protocol CRDL ug/l	Drinking Water Method Detection Limit(1) ug/l	Drinking Water Method Number(1)
Aluminum		200	45	200.7
Antimony		60	2	200.8
Arsenic	50	10	1	206.2
Barium	1000	200	2	200.7
Beryllium		5	0.3	200.7
Cadmium	5	5	0.1	213.2
Calcium		5000	10	200.7
Chromium	50	10	1	218.2
Cobalt		50	7	200.7
Copper(2)	1300(1000)	25	6	200.7
Iron	(300)	100	7	200.7
Lead(2)	15	3	4	200.8
Magnesium		5000	30	200.7
Manganese	(50)	15	2	200.7
Mercury	2	0.2	1	245.2
Nickel		40	15	200.7
Potassium		5000	500	200.7
Selenium	10	5	2	270.2
Silver	50	10	7	200.7
Sodium		5000	29	200.7
Thallium		10	2	200.8
Vanadium		50	8	200.7
Zinc	(5000)	20	2	200.7
Cyanide (total)		10	1	335.3

<Footnote>
(1) The above drinking water methods and their associated detection limits are those used by the PADER Bureau of Laboratories for drinking water analyses. They were obtained from Dennis Neuin, Chief, Metals Section, PADER Bureau of Laboratories.

(2) The values given are not MCLs but "action levels" at which public water systems must take action to reduce the contaminant concentration.
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RESPONSIVENESS SUMMARY

PART I: SUMMARY OF THE MAJOR COMMENTS AND QUESTIONS RECEIVED DURING THE PUBLIC MEETING AND EPA RESPONSES

This section summarizes the commentator's major issues and concerns and expressly acknowledges and responds to those issues raised by the local community. The major issues and concerns on the Proposed Plan for the Revere Chemical Site received at the August 12, 1993 public meeting and public comment period can be grouped into five categories:

A. General Clean-Up Concerns
B. Ground Water Clean Up
C. Soil and Solid Waste Clean Up
D. Potentially Responsible Party ("PRP") Issues
E. Superfund Process
F. Future Site Usage

The questions, comments, and responses are summarized below.

A. General Clean-up Concerns

@ A citizen asked who was monitoring the activities at the Site on a day-to-day basis.

EPA Response: The Revere Chemical Site does not currently require someone to be on the Site every day. When the Site is in the remedial action stage, a qualified person will be on Site every day to monitor the implementation of the design.

@ A citizen asked who would be maintaining the Site operations after the remedy has been implemented.

EPA Response: EPA usually enters into an agreement with the responsible parties to conduct the design and implement the remedy. This remedy will include long-term operation and maintenance ("O&M"). EPA will oversee the long-term O&M to ensure that it is being properly implemented and that the environment is being protected.

@ A citizen asked if the company that will be implementing the remedy has been selected yet.

EPA Response: EPA does not "select" a company to implement the remedy. Rather, the company or companies responsible for implementation of the remedy are those companies which have at one time or another either owned or operated the Site or arranged for the disposal of hazardous substances at the Site as those terms are used in Section 107(a) of CERCLA, 42 U.S.C. [Para] 107(a). As a result, these companies, or in some cases individuals, are liable under that section, and as such, responsible for implementation of the remedy.

@ A citizen asked if EPA's preferred remedy included deed restrictions.

EPA Response: Yes. EPA has revised the preferred alternative to include deed restrictions.

@ A citizen asked if the actions conducted at the Site to date are sufficient to maintain the status of the Site until the remedial action begins.

EPA Response: Yes. Enough work has been completed under the removal order to ensure minimal soil erosion and to sufficiently stabilize the Site until the start of the Remedial Action. Routine maintenance performed under the removal order assures Site stabilization is maintained.

@ Several commentors expressed concerns that the preferred alternative did not totally address all the contamination from the Site, specifically, the sediments in the tributaries of Rapp Creek.

EPA Response: At the public meeting EPA had stated that it was proposing to leave the sediment alone because the contamination does not appear to be harming the ecosystem in the creek to a great extent and because the sediments in the creek are sparse. EPA stated that concentrations in the

creek will likely go down once the soil in the process area is capped. As sediments migrate the contaminants are distributed and the concentrations go down. There is an on-going debate whether to go in with vacuums and possibly destroy the ecosystem, or to wait considering the likelihood that concentrations will go down once the sediments are no longer eroding into the creek. However based on the comments received during the public comment period and additional review and evaluation, EPA is now proposing to do additional stream corridor sampling for mercury contamination, the contaminant of most concern to the Fish and Wildlife Service, (the agency EPA works with on natural resource issues). The additional sampling will be used to verify the extent of Site-related mercury contamination and to evaluate response options for removing the mercury contaminated sediments from the stream corridor. EPA's objective is to do as little harm as possible to the creek system, because it is a high quality cold water fishery. The decision to remediate the creek is being deferred until this additional work is conducted and will be addressed in a subsequent Record of Decision ("ROD").

@ A citizen asked what would happen if EPA completes the remedy and stops assessing the Site and the sediment contamination is never addressed and resolved.

EPA Response: EPA will conduct long-term monitoring of this Site, no matter which remedy is selected. EPA has mechanisms in

place to re-evaluate and make changes, if necessary, to do what is best for the environment and human health. In addition, EPA has a five-year review period, at which time all elements of the remedy are re-examined for effectiveness.

B. Ground Water Clean Up

@ A citizen asked if it were possible that one of the test wells may hit the aquifer that supplies his drinking water.

EPA Response: When the test wells are installed, the goal is to intercept the aquifer or the water bearing zone, to test for contaminants. Because ground water flows in specific directions, the presence of a well on the Site, a mile and a half away, will not affect any residential wells.

@ A citizen asked how the contaminants are prevented from leaking into the ground water when the test well is drilled and whether the well is lined?

EPA Response: There are basically two ways to construct a monitoring well. One is an open hole, similar to the way a residential well is constructed. A hole is drilled, and because the rock is hard, the well stays open. The fractures in the rock carry the ground water into the well bore, where it is pumped out. The second method is used in areas with a lot of fractures at varying depths. In this case we want to sample a specific waterbearing fracture. The well is drilled in the same way, but we install either PVC pipe or stainless steel pipe with holes or slats in the sides of the casing at the specific depth that we want to monitor. The rest of the well borehole is cemented off. Therefore, we do not cross-contaminate water by mixing it from the surface down to the bottom.

@ A citizen asked how deep were the monitoring wells at the Site.

EPA Response: There are 11 wells on the Site which can be divided into two groups. Half of them are less than one hundred feet deep, and the other half are between one hundred and two hundred feet deep. There is also a production well that is 350 feet deep.

@ A citizen asked if organics were the only compounds tested for in the wells.

EPA Response: EPA tested for what is called a target analyte list and the target compound list. The target analyte list includes metals and inorganics. The target compound list includes volatiles, semivolatiles, polycyclic aromatic hydrocarbons ("PAHs"), and pesticides.

@ A citizen asked if the water would be discharged into the stream.

EPA Response: Yes, the treated ground water will be discharged into the west tributary of Rapp Creek.

@ A citizen asked if it would be possible or desirable to pump the discharge back into the ground water.

EPA Response: It would be possible to pump the discharge back into the ground water. However, because the water is going to end up in the creek naturally by the direction of the ground water flow, it is not desirable to do so. We will be pumping the water out of the well slightly faster than it would naturally flow through the aquifer.

@ A citizen asked if during the process of removing the contaminants from the ground water, a citizen's well were to go dry, would the citizen be responsible for redrilling the well.

EPA Response: If the event were caused by remediation of ground water at the Site and EPA was conducting the remediation, EPA would be responsible. If a PRP caused the event, the PRP would be responsible for redrilling the well. However, as part of the design process we identify the bestplace to drill the well to capture the most amount of water without impacting nearby wells. We conduct pump tests to calculate the size of the cone of depression, where the capture zone is, and at what distance and what direction water will flow to the well. The most critical part of this process with regards to the potential for residential wells drying out is the size of the capture zone. Only the contaminated water is pumped and treated.

@ A citizen asked if it were possible that quarry blasting in the vicinity of the Site could cause ground water contamination.

EPA Response: The blasting could have an effect on the ground water system only if the blasts caused large fractures that extended all the way to the Site which is virtually impossible. The blasting that is done at quarries is very limited. Therefore, there is usually no damage to something far from the source of the blasting.

@ A citizen asked if EPA would test the water in nearby residential wells periodically.

EPA Response: Long-term monitoring will include some off-site residential sampling. The exact location of the residential wells to be included in long-term monitoring will be addressed in the remedial design work plan.

C. Soil and Solid Waste Clean Up

@ A citizen asked where the onsite contaminated soil was going to be taken, specifically if it was going to be disposed of on someone's private property.

EPA Response: One of the remedies includes offsite disposal for the contaminated soils, but that was not EPA's chosen remedy. These soils will be capped onsite. The proposed alternative does include offsite disposal of solid waste. The waste will undergo characterization and will be disposed of at an EPA-approved facility.

@ A citizen asked what is being done to control the erosion outside the fenced area around the site.

EPA Response: The selected remedy will include regrading and capping of the process area which is inside the fenced area, the side slopes coming from this area will need to be stabilized in order to ensure the integrity of the cap. Therefore these areas outside the fenced area will be addressed in the remedial design.

@ A citizen asked if the slurry walls would only be erected in those areas illustrated on the Site map.

EPA Response: The slurry wall is only proposed in the area of former collection basins AA and BB to provide containment of soils containing semi-volatiles. Additional sampling will be conducted during the Remedial Design Phase to more accurately delineate exactly where the slurry wall will be constructed.

@ A citizen asked for an explanation of the vacuum extraction process.

EPA Response: During the extraction process, the soils remain in place and air is forced through the soil by a vacuum. The air that is pulled through the soil will cause the volatile organics to vaporize. This air is then passed through a treatment system to ensure there are no releases of organics into ambient air. Carbon absorption canisters are the proposed treatment for the recovered air stream.

@ Will the exhaust gases from the vacuum extractor be tested?

EPA Response: Yes, exhaust gases will be monitored and tested to ensure the continued effectiveness of the carbon and to ensure compliance with air requirements.

@ A citizen asked how access to the process area and spray field would be limited and if additional fences were going to be erected.

EPA Response: Access will be limited through the use of fencing around these areas.

@ A citizen asked if any soil sampling was conducted offsite.

EPA Response: Background samples were taken of the soil and sediment offsite to establish the background quality of the soil and sediment.

D. Potentially Responsible Party ("PRP") Issues

@ A citizen asked if measures were being taken to pursue the former owners and the parties responsible for the contamination, rather than spending taxpayer dollars to clean up the Site.

EPA Response: The responsible parties have been conducting the work and EPA has been overseeing that work. Therefore, only limited Superfund monies have been used at this Site.

@ A citizen asked how EPA was dealing with the PRPs who own the Site.

EPA Response: At Superfund Sites, EPA has several options available to deal with PRPs. One option is to place a Federal lien on the property until past funds that were spent on Site clean up are recovered. Before a Federal lien is placed on a property, the owners of the property are entitled to a due process hearing to determine whether EPA has the right to place such a lien on the property. Another option is to pursue a cost recovery action. This option is used when EPA is aware of individuals or companies that are potentially responsible but are not paying for the cleanup. EPA will then pursue those parties for past costs. A third option would be issuance of an administrative order which requires the PRP to conduct the remedy at the Site.

@ A citizen asked about the status of the individual responsible for the contamination.

EPA Response: There is no single individual responsible for the contamination at the Site, but rather, both individuals and companies whom EPA believes are responsible for the contamination. How EPA will deal with these individuals is at present, enforcement confidential.

@ A citizen asked if there were other measures that EPA could use to recover money or punish those individuals responsible.

EPA Response: Superfund is a civil statute, not a criminal statute. Therefore, we cannot take criminal action against liable parties. We can pursue them only for contribution to the cost of the remedy, conducting the remedy, or for past costs.

@ A citizen asked if a lien has been placed against the Revere property.

EPA Response: EPA has sent to the property owner notice of its intent to file a lien. The property owner has requested a due process hearing. That hearing has not, as of yet, been scheduled.

@ A citizen asked if Harbucks were in any way responsible and if not, if the company would be able to make a profit on the property after the remediation is completed.

EPA Response: Under Section 107(a) of CERCLA, 42 U.S.C. [Para] 107(a), Harbucks is a liable party since they are the current owner of the property. EPA does not have sufficient information with regard to the value of the property to make an informed decision as to whether Harbucks would realize a profit if they sold the Site following remediation.

@ A citizen asked if the value of property would be considered in an individual's net worth when the financial viability is calculated.

EPA Response: When EPA notices PRPs, they are asked for a good faith offer to design and implement the remedy. One of the requirements is that a PRP prove that it is financially able to conduct the work. They also are required to provide proof of insurance and numerous other financial assurances. The decision of whether to include the value of the property into an evaluation of the company's net worth is an enforcement confidential matter.

E. Superfund Process

@ A citizen asked if the Township could have a copy of the maps illustrating the locations of the ground water wells that tested positive for contamination, the map illustrating the proposed cap area, and the map of the proposed soil remediation areas.

EPA Response: All of these maps are in the RI documents which are part of the Administrative Record. The Township Building is one of the Administrative Record repositories so these documents are easily accessible to the public.

@ A citizen asked if, after the clean-up process began, the community and the Township would continue receiving updates on the status of the Site.

EPA Response: Yes, EPA will continue to inform the community using fact sheets, public meetings, and direct phone calls to Township supervisors and officials.

@ A citizen asked what the process was after the public comment period ended.

EPA Response: The next step will be to prepare a responsiveness summary using the transcript from the Proposed Plan public meeting and all additional information. EPA takes all comments questions, letters,and the public meeting transcript, and responds to all substantive issues in this formal document. Then, EPA prepares the ROD after deciding which alternative will be implemented. The ROD is signed by the Regional Administrator and will be placed in the Site repositories once signed. EPA will run a public notice announcing the ROD has been signed and is available to the public.

@ A citizen asked if the next step is to design the remedy and who would be designing the remedy.

EPA Response: After the ROD is signed, EPA will issue special notice letters to the PRPs inviting them to implement the Remedial Design and Remedial Action. Once these letters are issued it triggers a 120day moratorium period during which the parties may negotiate with EPA to conduct the remedy. If the parties agree to do the work, they enter in to a Consent Decree. A Consent Decree is a document entered by the court which outlines all the requirements for implementing the Remedial Design and Remedial

Action by specifying when the work plans are due as well as other critical deadlines.

@ A citizen asked if after the Consent Decree is entered the next step is to locate a contractor.

EPA Response: If a cleanup is being performed by the responsible parties, those parties seek a contractor. The responsible parties are then required to notify EPA, usually within 15 days of the effective date of the consent decree, of the contractor's qualifications and experience for EPA acceptance. Then, the contractor usually has 45 days to submit the work plan for the Remedial Design. This work plan will set forth schedules for delivering any required samples to successfully design the systems that are required for remediation.

@ A citizen asked if it would be six or eight months until the actual work begins, based on the schedules outlined in the Consent Decree.

EPA Response: It could be even longer. First, the Remedial Design must be completed. Then, the Remedial Action begins, when the actual work on the Site is performed. The actual work will likely not begin for at least one year pending review and approval of the design documents.

@ A citizen asked if it would have been possible to notify the Township officials well in advance of the public meeting to better schedule the meeting and ensure that the Township was well informed.

EPA Response: EPA has been in constant communications with the Township, including discussions on the best location for the public meeting and what time to hold the meeting. By law, EPA is bound to hold the meeting within the thirty-day public comment period.

@ A citizen asked what event triggered the thirty-day public comment period.

EPA Response: The release of the Proposed Plan.

@ A citizen asked if it would have been possible to postpone the release of the Proposed Plan.

EPA Response: EPA attended a Township meeting in April during which it notified the Township that the Proposed Plan would be issued in the summer. EPA made every attempt to ensure that interested members of the community received a copy of the Proposed Plan and had ample time to prepare for and attend the public meeting. These events have not been a surprise, they have been carefully planned. Therefore, it would have been possible, but not desirable, to postpone the Proposed Plan.

@ A citizen asked if there were procedures in place to notify local communities of Superfund sites in their area, and how often the National Priority List ("NPL") is updated.

EPA Response: EPA has requirements, under the Resource Conservation and Recovery Act ("RCRA") to track and regulate hazardous waste production and disposal. The NPL list is still growing as new sites are identified and classified as Superfund sites. Generally, EPA does not specifically go to each local township and municipality and notify them that there is potentially a Superfund site in their jurisdiction. When a site is proposed for the National Priorities List, it is published in the Federal Register. When the site is officially listed, more extensive community outreach is conducted by placing public notices in the newspaper, sending out fact sheets, and holding public meetings. However, most communities are well aware of a problem before EPA adds a site to the NPL. Often, EPA is informed of the problem by community officials.

F. Future Site Usage

@ Several citizens asked what kind of uses the property will

have after the remedy has been implemented. For example, could it be used as a golf course or a quarry?

EPA Response: Due to the nature of the cap, the areas of the property that are capped will be restricted. Anything that would breach the integrity of the cap would be an unsatisfactory use of the area. The areas of the property not capped will be without restrictions. The main restriction on the usage of the land will prohibit such activities as excavation or installation of wells. Additionally, there will not be any use of ground water from within the capped area. A golf course could be built but the ground water could not be used to irrigate the property. Also a quarry could not be implemented at the location of the cap because itwould likely damage the cap. However, it is possible to have a quarry in another section of the property where it would not damage the cap. The presence of the cap limits the future use of the Site which will be controlled to a certain extent by deed restrictions. Site use outside the area of contamination will be the jurisdiction of the Township which handles zoning matters. Therefore, the property owner must confer with local officials, and most likely, apply for a zoning permit in order to change the current use of the land.

@ Will the land be able to be productively used within a couple years?

EPA Response: The presence of the cap and the corresponding deed restrictions limit the future use of the Site; however, there can be productive uses within these limits.

PART II: SUMMARY OF WRITTEN COMMENTS RECEIVED AND EPA'S RESPONSES

These comments or questions were received at the August 12, 1993 public meeting or by mail during the public comment period, and may have been covered generally in Part I of this Responsiveness Summary. Concerns and questions presented in this section were placed into the following categories:

Copies of all written comments received are contained in the Administrative Record for the Site. The written comments and EPA's responses are summarized below:

PRP Comments: In a 20-page document dated September 24, 1993 the Revere Steering Committee ("RSC") comprised of AT&T Technologies, Inc., Carpenter Technologies Corporation, GTE Products Corporation, IBM Corporation, NCR Corporation, Square D Corporation, and Unisys Corporation commented on the Proposed Plan for the Site. Substantive comments and concerns and EPA's responses are summarized below.

RSC comment #1: The RSC stated they were disturbed by EPA's denial of the RSC's request for a 45-day extension to the public comment period while extending the comment period to newly identified and recalcitrant PRPs. The RSC states that EPA's motives in the initial denial of their request was due to the Agencies desire to issue a ROD by the end of the fiscal year in order to achieve an end of year goal.

EPA response: EPA denied the RSC committee request for an extension to the public comment period due to the untimeliness of the request. The RSC conducted the RI/FS at the Site. EPA selected a Proposed Remedial Alternative from the alternatives presented in the RSC's RI/FS report. EPA's selection was based on information with which the RSC was intimately involved, and therefore, the RSC was knowledgeable of the Site as well as the alternatives that were evaluated.

@ RSC comment #2: The committee believes the proposed remedy results in the unnecessary expenditure of at least $3,000,000 instead of selecting the alternative preferred by the RSC.

EPA Response: EPA disagrees that the additional expenditure is unnecessary. Under the NCP, EPA uses nine criteria of evaluation. EPA is required to select an alternative that attains ARARs if an action is warranted. Action is required where there is an unacceptable risk. Based on the risk assessment conducted for this Site, exposure to contaminants in the soil at

the Site represents an unacceptable risk. In this case, the soil erosion control cap preferred by the RSC will not meet the threshold criteria of attaining all ARARs. Alternative S6 is protective of human health and the environment and attains all ARARs.

@ RSC comment #3: The committee believes that the Pennsylvania ARAR which requires that the ground water be remediated to background levels is neither applicable, appropriate nor relevant. The committee believes that if EPA concludes that remediation to background is an ARAR, EPA should waive this ARAR based on technical impracticability.

EPA Response: The Commonwealth of Pennsylvania has asserted an ARAR for this Site requiring that all ground water must be remediated to "background quality". The specific citations for this ARAR include 25 PA code 264.90 - 264.100, and in particular, 25 PA code 264.97(i),(j), and 264.100 (a)(9). EPA has recognized this as a relevant and appropriate requirement for ground water remedial action at the Revere Chemical Site. Sufficient evidence does not exist to waive this ARAR based on technical impracticability. Nor does sufficient evidence exist to demonstrate that a combination of natural attenuation and institutional controls is a feasible remedial action alternative. Due to the need for additional information, EPA has decided to defer the selection of a ground water remedy until additional data is gathered. The goal of this additional hydrogeologic investigation is to provide information on the practicability of actively pumping ground water to achieve background cleanup levels. This data will be compared to information previously gathered to determine the rate of natural attenuation after the Organic Hot Spots have been remediated.

@ RSC comment #4: Since EPA must consider the cost effectiveness of a remedy, the Pennsylvania background requirement would substantially increase costs, and since cleanup to MCLs is protective of public health and the environment, the Pennsylvania background requirement should not be considered an ARAR.

EPA Response: EPA disagrees. Attainment of ARARs is a "threshold requirement" as is the requirement that the remedies be protective of human health and the environment. See 40 CFR [Para]300.430 (e)(2)(iii). ARARs have to be met by the selected remedy, even if it is not necessaryto ensure protectiveness. If a requirement is applicable or relevant and appropriate, it must be met unless one of the six waivers applies. ARARs represent the minimum cleanup level that a selected remedy must attain. EPA has determined that the Pennsylvania cleanup to background is relevant and appropriate to ground water remediation. However, EPA is presently deferring the ground water remedy until additional data is gathered to make this determination.

@ RSC comment #5: EPA should waive the Pennsylvania "ARAR" because it has not been consistently applied or has been variably applied and inconsistently enforced in similar circumstances at other remedial actions within the State.

Inconsistent application of the Pennsylvania Requirement has occurred both by EPA and PADER. For example, the RODs for the Reeser's Landfill Site, Henderson Road Site, Craig Farm Dump, Strassburg Landfill, CryoChem and Osborne Landfill did not require the restoration of ground water to "background " levels, even though at some of these sites there is low level contamination of the drinking water aquifer.

EPA Response: EPA must consider each site on a case-by-case basis when issuing a ROD. EPA considers in detail the nine balancing criteria and other factors, such as site-specific risk factors, site conditions, the amount of waste to be treated, etc. The fact that EPA did not require cleanup to background levels at six other sites where a drinking water aquifer has been contaminated at low levels out of the many RODs signed by EPA is not conclusive evidence that EPA has been inconsistent in its application of ARARs.

@ RSC comment #6: The cost of installing a clay cap is significantly more than the additional cost to achieve the necessary VOC concentration for a soil erosion cap. Moreover, CERCLA prefers treatment over encapsulation and therefore, the soil cap should be the preferred choice.

EPA Response: Insitu vacuum extraction is a component of both Alternative S3 (Soil Erosion Cap) and Alternative S6 (Clay Cap). As outlined in the ROD, the cleanup level for VOCs in soil will be based on the performance of the VOC system rather than a cleanup level based on the permeability of the cap as presented in the RSC's FS Report. Therefore, both remedies would require the same level of treatment for the VOC-contaminated soils and hence, there would be no cost difference for this component of Alternative S3 and S6. Alternative S6 is not encapsulation as stated in the comment. EPA has determined that the landfill closure requirements set forth in the Residual Waste Regulations at 25 PA Code [Para][Para] 288.234, 288.436 and Appendix A Table II are relevant and appropriate for any actions which include capping. The soil erosion control cap preferred by the RSC does not meet the requirements of these regulations.

@ RSC comment #7: There is no scientific data to support the need for a clay cap as opposed to a soil erosion cap relative to the potential for migration of metals from the soil.

EPA response: EPA is mandated by CERCLA to select remedies that attain all ARARs. The soil erosion cap does not meet the threshold criteria.

@ RSC comment #8: The Site possesses the characteristics which make a source control-natural attenuation remedial strategy for ground water appropriate and, indeed, preferable. At the present time, the contamination is limited, an adequate monitoring system can be designed, source remediation for VOCs is proposed, there are no receptors at risk and the characteristics of the contaminants are suitable for natural attenuation and degradation.

EPA Response: EPA is not convinced that natural attenuation is preferable even when there are no current receptors to the contaminated ground water. Remediation of the VOC-contaminated soils along with pumping of the contaminated ground water is consistent with CERCLAs preference for treatment. However, sufficient evidence does not exist to waive this ARAR based on technical impracticability. In addition, sufficient evidence does not exist to demonstrate that a combination of natural attenuation and institutional controls is the only feasible remedial action alternative. EPA has decided, therefore, to defer the selection of a ground water remedy until additional data is gathered.

@ RSC comment #9: The cost for each alternative is derived from the FS Report. Soil and ground water remedial assessments were made on the basis of protecting ground water to MCL levels, not "background". Therefore, these costs are not accurate if PADER's policy of "background" is enforced.

EPA Response: The costs for ground water remediation were developed using a 30-year O&M period which is the typical time frame used by EPA for estimating ground water cleanup costs. The costs projected for maintaining the insitu vacuum extraction system were estimated assuming that the 22.8 mg/kg cleanup level proposed by the RSC would be attained in 11 months. EPA agrees that the costs associated with the operation and maintenance of the VE system are not accurate and will increase in proportion to the length of time the system is operated. EPA has stated in the ROD that all costs, time frames and waste/treatment volumes are estimates and the Present Worth estimates may vary depending on the actual duration of the Remedial Action field activities.

@ RSC comment #10: The Plan fails to acknowledge as part of the Site history, the extensive removal action and sedimentation and erosioncontrol measures implemented by the RSC to comply with the 1991 Administrative Order For Removal Response Activities.

EPA Response: EPA agrees. EPA has included this information in the ROD.

@ RSC comment #11: "The results of the soil investigation conducted during the RI identified ten metals: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, vanadium and zinc, all of which are present in Site soils at concentrations statistically distinguishable from background." The preceding statement is not accurate. For example, during the background sampling for mercury, only one sample contained detectable levels of mercury. Therefore, and as indicated in the Feasibility Study, there is insufficient data to derive any statistical analysis for mercury. Also, arsenic and zinc are not statistically distinguishable from background.

EPA Response: The statement was taken verbatim as it appears on page 1-9 and also on page 1-13 of the FS which was prepared by the RSC consultants. The RSC refers to Figure 6-11A, note 5 of the RSC's RI Report where it states, "Because mercury was not detected in the background soil samples, each sample that had detectable concentrations of mercury was considered statistically distinguishable." As stated by the commentor the data was insufficient to derive a statistical background number for mercury. However, the absence of mercury in the background samples demonstrates that mercury present in Site soils is due to Site related activities, is a Site contaminant of concern, and is therefore distinguishable from background. With regard to arsenic concentrations, on page 6-21 of the RSC's RI Report, it states that arsenic concentrations are statistically distinguishable from background. With regard to zinc, on page 6-25 of the RSC's RIReport, it states zinc is statistically distinguishable. Therefore, any inaccuracies in that statement are as a result of inaccurate conclusions drawn in the RI and FS Reports submitted by the RSC. EPA has revised the statement by deleting the word statistically.

@ RSC comment #12: Has EPA received approval from PADER regarding the design of the cap as described in the Plan?

EPA Response: No. The dimensions stated in the Proposed Plan were used to develop cost estimates. The actual clay cap to be installed will comply with the design requirements of the Pennsylvania regulations.

@ RSC comment #13: None of the ground water alternatives in the FS Report include costs for additional pre-design or design investigations. The RI Report concluded that the extent of ground water contamination at the Site had been defined. The Proposed Plan stated: "However, the actual number and location of extraction wells will be determined following additional hydrogeologic characterization that will be conducted in the remedial design phase."

EPA Response: The cost of the ground water extraction option needs to include funds for a design study, including long-term pump tests on up to four wells. This is needed to define the capture zones of the extraction wells. This type of additional hydrogeologic characterization is typically conducted during the remedial design phase.

@ RSC Comment #14: "Based on current information, this alternative would appear to provide the best balance of trade-offs among the alternatives with respect to the nine criteria the EPA uses to evaluate each alternative." The RSC states that the preceding statement in the Proposed Plan is not accurate as evidenced by the statements in the Comparative Analysis of Alternatives Section of the Proposed Plan which indicate that Alternative S3 provides the same level of performance relative to the NCP criteria as Alternative S6.

EPA Response: EPA disagrees. Alternative S3 does not provide the best balance of trade-offs among the alternatives with respect to the nine criteria because it does not comply with ARARs. EPA has identified the Residual Waste Regulations as ARARs for the Site. Under the Compliance with ARARS section in the Proposed Plan, however, EPA incorrectly stated that "Alternative 2 through 9 can be designed, constructed and operated to meet with all appropriate requirements." That statement was incorrect. As

stated in the ROD, Alternatives S3, S7, S8 and S9 would not attain the closure requirements for a landfill under the Pennsylvania Residual Waste Regulations for the permeability of the cap.

@ RSC comment #15: "., EPA believes the preferred alternative would protect human health and the environment, would comply with ARARs and be cost-effective." As evidenced by the statements from the Plan for each of the evaluation criteria, Alternative S6 does not provide any advantages and is more costly than Alternative S3. Therefore, this statement is not accurate relative to being "cost-effective".

EPA Response: See previous response. Noting the correction to the statement regarding compliance with ARARs, this statement is accurate with regard to Alternative S6 being cost-effective when compared to the other Alternatives which would comply with all ARARs.

PRP Comments: In an 11-page document, General Electric Company commented on the Proposed Plan for the Site. Substantive comments and concerns and EPA's responses are summarized below.

@ GE Comment #1: Alternative S2 in the Proposed Plan togetherwith institutional controls like those described in Alternative GW-2 would satisfy all the objectives identified in the Proposed Plan and would permit all ARARs to be achieved. While GE questions whether the Pennsylvania ARARs relied upon by EPA in selecting the remedy are ARARs, GE believes the ARARs could be satisfied now based on a review of Site conditions. In any event, there is not evidence in the RI Report that background concentrations at the edge of the waste management area could not be achieved with Alternative 2. GE further states that data from MW-9, MW-10, and MW-11 provide additional reason to question an assumption that the regulations would be triggered.

EPA Response: In regard to the Pennsylvania ARARs, see response to RSC comment #2. Although the "primary objectives" of the remedy as stated in the Proposed Plan may be met by Alternative 2, EPA disagrees with the statement that the ARARs could be satisfied with Alternatives 2 and GW-2. Section 121(d)(2)(A) of CERCLA requires that the selected remedy comply with or attain the level of any applicable or relevant and appropriate requirements of federal or State environmental laws. As stated previously, a soil erosion cap would not comply with the standards for a cap and cover required by 25 PA Code [Para][Para] 288.234, 288.436 and Appendix A Table II. Alternative 2 is rejected because it does not meet the threshold criteria.

Presuming the commentor defines the edge of the waste management area as the area to be capped, EPA agrees that the RI does not contain evidence that background concentrations could not be achieved. Monitoring wells do not exist in these locations. In addition MW-9, MW-10 and MW-11 are screened in a separate deeper aquifer than the contaminated wells and therefore, are not in downgradient positions from the contaminated wells. Therefore, the comment that ARARs for ground water would not be triggered is irrelevant since these are not monitoring the "known" contaminated aquifer.

@ GE comment #2: All unacceptable risks to health and the environment would be eliminated by an engineered soil cap and institutional controls required to preserve the integrity of the cap. The Baseline Risk Assessment shows that even if no remedy were implemented, the Revere Site presents minimal risks. Table 1 of the Proposed Plan shows that for the four current use scenarios considered, even the greatest risk as shown on Table 1 was well within the range of acceptable levels. Table 1 shows noncancer hazard quotients of 2.9 to 2.95. These are slightly above the hazard index of 1, where "there may be a concern for potential non-carcinogenic effects." The quotient exceeds 1 only because of an assumption of inhalation of chromium. However, the Proposed Plan acknowledges that the chromium risk is probably overstated and thus leads to the conclusion that EPA's concern is also overstated. Accordingly, there is a substantial question as to whether the Site represents any unacceptable risks given current uses.

EPA Response: The assumptions regarding inhalation represent a default

scenario for reasonable maximum exposure. This scenario, which is less than worst-case, is EPA's estimate of the highest exposure that an actual individual would be likely to receive. The PRPs have not presented any data specific to the Site that suggest some lower exposure would be more appropriate. Therefore, EPA believes that the inhalation risk assessment is protective of public health, while not being unreasonably pessimistic. Because the estimate is a reasonable maximum, most individuals would have lower inhalation exposure and lower risk.

If the chromium concentration detected in the soil were known to be trivalent chromium, the health risk estimate would have beenconsiderably lower. However, the PRPs have not provided EPA with data which distinguish between trivalent and hexavalent chromium. Since the ratio of the two chromium species is unknown, EPA must make the protective assumption that all chromium is hexavalent. This is acknowledged as a significant uncertainty in the risk assessment, but EPA has chosen, as a matter of national policy, to give the benefit of such uncertainties to protection of the public health and the environment and not the PRPs.

@ GE Comment #3: The Baseline Risk Assessment ("BRA") estimates somewhat greater risks for a hypothetical onsite resident. However, the Risk Assessment does not provide any basis for assuming residential development. In fact, it specifically refers to this scenario as "hypothetical" because future use had not been considered. BRA at N-28.

Both the NCP and EPA Guidance prohibit such an assumption and require that exposure scenarios be reasonable based on site-specific evidence. The Preamble to the NCP states:

> An assumption of future residential land use may not be justifiable if the probability that the Site will support residential use in the future is small.

EPA may not conclude that such a probability is more than "small" without site-specific evidence. There is nothing in the Risk Assessment supporting the hypothetical assumption of future residential use. Therefore, risks premised on it should not be considered.

EPA Response: EPA Region III places the burden of documenting non-residential future use on the PRPs. As with the inhalation and chromium species issues, EPA gives the benefit of the uncertainty to protection of the public and the environment, not the PRPs.

In order for EPA to determine that the probability of residentialuse is small, the risk assessment must contain a detailed discussion of population trends, current zoning, development plans of local authorities, current use restrictions on nearby properties (e.g., state parks, gamelands, etc.), and other appropriate site-specific factors. The risk assessment did not contain this information, and EPA is not aware of any characteristics of the Site (other than its NPL status) that make residential development unlikely. The argument that residential use is unlikely because the Site is contaminated, and therefore, does not need to be cleaned, is not sufficient.

@ GE Comment #4: The Pennsylvania regulations with respect to attaining background concentrations are not ARARs.

First, they are not relevant and appropriate until there is evidence that a monitoring well located at or beyond the downgradient edge of the process area -- "the "waste management area" here -- would show concentrations of VOCs or TCB above background.

Second, the regulations do not require all contaminated ground water to be restored to background, only that background be achieved at the downgradient monitoring points.

Third, under the NCP, relevant and appropriate standards are those that are well-suited to the circumstances at the particular site under review. A

requirement that ground water be restored to background concentrations without regard to whether or not the ground water will ever be used cannot be considered relevant and appropriate.

EPA Response: EPA disagrees. EPA has determined that the Pennsylvania regulations are relevant and appropriate. The trigger for this requirement is that ground water has been contaminated above drinking water standards. EPA disagrees that only background levels be achieved at the downgradient monitoring points (outside the area to be capped). If waste is left in place, the area of attainment is the area of the plume, excluding the waste management unit. Although there are no waste management units remaining on the Site, source areas for ground water contamination are defined as the Organic Hot Spots. Wells that are placed downgradient of these Organic Hot Spots are contaminated and are in the "area of attainment" for ground water remediation even though this area encompasses an area of the Site to be capped. Moreover to state that absent evidence of contamination at downgradient monitoring points, ARARs are not triggered is contrary to the letter and spirit of CERCLA cleanups. CERCLA is concerned not only with cleaning up the contaminated ground water that escapes from a Site, but also in cleaning up the ground water onsite. Since there is ample evidence to show there is ground water contamination onsite then ARARs are triggered. However, as stated above, EPA has chosen to defer making a decision with respect to ground water until further data has been gathered.

@ The Township supervisors and the Township Engineer wrote to suggest that all contaminated sediment be removed from the onsite tributaries as part of the Remedial Action.

EPA Response: The Proposed Plan did not address remediation of the stream sediment. Based on comments received, EPA is requiring additional sampling of the stream corridor to define the extent of mercury contaminated sediment and an evaluation of alternatives for addressing removal of mercury contaminated sediments.

@ The Township supervisors wrote asking for the actual proposal regarding that portion of the preferred alternative which limits access to the process area and spray fields and requires long-term monitoring and a 5year review program.

EPA Response: Fencing will be used to limit access to the capped areas of the spray fields and the process area. Section IX, The Selected Remedy and Performance Standards, specifies the requirements for long-term monitoring and the five year review.

@ The Township supervisors wrote asking about the proposed steps for the protection of endangered species on the Site. The letter indicated that the Township is aware of at least one plant that is under consideration for endangered species protection on the Site.

EPA Response: The law requires that if it is determined that the remedy will adversely impact endangered species or sensitive habitats that steps are taken to mitigate those impacts. The selected remedy may impact the wetland area in the South Spray field. During design, EPA will evaluate those impacts and options for addressing risks posed by the contamination.

@ Township comments: Comments were made at the meeting by the area residents and Township which indicated there may be offsite areas contaminated by air-borne effluent (while being sprayed) and/or overland runoff when the Site was in operation. The EPA representative indicated that EPA would do a site inspection of these areas with a Township representative and/or a resident who is knowledgeable of these areas. Following the inspection and additional review of previously completed soils testing, it is our understanding that remediation of offsite areas may be included in the final plan if deemed warranted by EPA.

EPA Response: The EPA Remedial Project Manager contacted the resident who indicated he knew where these offsite areas are located. He did not make himself available to EPA officials. Township representatives were not aware

of these alleged offsite contaminated areas. However if new information were to indicate that contamination related to this Site exists inoffsite areas, EPA would take steps toward remediation.

B. Ground Water Clean Up

@ The Township supervisors asked for a written proposal of the plan to protect the neighboring wells and asked which neighboring residential wells would be monitored in conjunction with the Remedial Action.

EPA Response: These issues will be addressed in the remedial design work plan. When the work plan is approved it will be placed in the Site repository which is located at the Township building.

@ The Township supervisors asked for a written proposal addressing the final discharge of treated ground water to the stream before the start of the Remedial Action plan. The Township is concerned that this discharge could disturb contaminated sediment and cause the spread of the contamination downstream.

EPA Response: In response to public comments, EPA has decided to defer the ground water remedy until additional data is gathered. This issue will therefore, be addressed in OU-2. The preferred alternative for OU2 will be required to meet the substantive requirements of the National Pollution Discharge Elimation System (NPDES) which sets limits for discharges to all surface waters. This information will be included in the remedial design for the Site, a copy of which will be placed in the Administrative Record for the Site which is located at the Township building.

@ The Township Engineer wrote asking that Mr. and Mrs. Nick Cutaneo receive the test results from previous well water samples sent to them.

EPA Response: The test results for the Cutaneo's well water were sent to Mr. Cutaneo on September 1, 1993.

@ The Township Engineer wrote asking that wells on all adjacentproperties be included in EPA's long-term monitoring, with results being sent to the property owners on a regular basis.

EPA Response: EPA will determine which wells will be included in long-term monitoring during the remedial design phase. EPA will send test results to the residents following receipt and evaluation of the analytical data.

C. Soil and Solid Waste Clean Up

@ The Township supervisors and the Township Engineer wrote asking that the silt fence be installed along the entire length (both sides) of the two tributaries which traverse the Site property.

EPA Response: EPA will evaluate the need for additional silt fencing.

D. Superfund Process

@ The Township supervisors wrote asking that any future updates regarding Revere or any other Site in Nockamixon, Township be shared with the Township officials as soon as possible, including updates or additions to the CERCLIS list.

EPA Response: The Township currently receives copies of the monthly progress report which are submitted to EPA by the consultants for the RSC. EPA will continue to have copies of Progress Reports sent directly to the Township. In addition the Township receives copies of any Fact Sheets that are prepared for the Site. With respect to the updates and additions to the CERCLIS List. Updates to this list are made on a biweekly basis. Currently, EPA does not notifying individual townships and municipalities when a site is listed on the CERCLIS. EPA does not have the resources to do this every time the list is updated. However the Township can periodically request the information which is specific to their area by writing the FOIA

coordinator and requesting all sites on the list within their geographic area.

@ The Township Engineer wrote requesting that EPA hold an additional public meeting just prior to the start of construction activities at the Site.

EPA Response: EPA routinely holds public meetings at critical milestones in the cleanup process. EPA will comply with this request.

@ The Township Engineer wrote requesting that the Township supervisors be notified in writing of all important dates and deadlines in the remediation selection/implementation procedure.

EPA Response: The Township currently receives copies of the monthly progress report which are submitted to EPA by the consultants for the RSC. EPA will continue to have copies of Progress Reports sent to the township.

E. Future Site Usage

@ The current owner of the Site property wrote objecting to EPA's remedy, specifically as it minimizes future usage of the Site.

EPA's Response: Each of the remedies evaluated for mitigating risk posed by this Site would minimize future usage of the Site to some degree. It is not uncommon for Superfund Sites to have restrictions on future use as a result of a cap being a component of the remedy. EPA's goal is to select remedial actions that protect human health and the environment, that maintain protection over time, and that minimize untreated waste. This goal reflects CERCLAs preference for achieving protection through the use of treatment to the maximum extent practicable. In addition EPA is required to select remedies that are cost-effective. The cap is a cost-effective way to mitigate the threats to human health, and the environment posed by the inorganic contamination of the soil at the Site.

@ State Comments: The Proposed Plan shows the calculated risks for beryllium, PAHs, and PCBs but does not include chromium, lead, arsenic and other significant site-related contaminants. Significant concentrations of other site-related contaminants should be included in the risk assessment for the site because of the cumulative effects of these substances.

EPA Response: Significant concentrations of site-related contaminants was included in the risk assessment. Table I of the Proposed Plan identified those chemicals associated with the majority of the risk.

@ State Comment: The Proposed Plan should state how access to the process area and spray fields will be limited.

EPA Response: As stated in the ROD, fencing will be used to limit access in these areas.

@ State Comment: The permeability/infiltration rate of the caps proposed as alternatives should be given in the Proposed Plan.

EPA Response: The Proposed Plan summarizes information presented in the RI/FS Reports. As such, that level of detail was not presented but can be found in the FS document.

@ State Comment: The operation and maintenance requirements of the slurry wall are not given in the Proposed Plan. This may have a bearing on the long-term effectiveness and permanence of this part of the proposed remedy.

EPA Response: O&M requirements of the slurry wall will be addressed as part of the remedial design process. As stated in the ROD, a postconstruction maintenance plan shall be developed to maintain the integrity and effectiveness of the slurry wall, including making repairs to the slurry wall as necessary.

@ State Comment: The discussion of long-term effectiveness and permanence

contained in the Proposed Plan does not adequately address this criterion.

EPA Response: Although not specifically outlined in the Proposed Plan, EPA believes this has been adequately addressed in the Summary of the Comparative Analysis of Alternatives Section of the ROD.

@ State Comment: According to the RI/FS report, there exists the potential for buried drums to be located in the vicinity of lagoon C. The Proposed Plan does not address the possibility of investigating the Site for additional buried drums, or how such areas would be remediated.

EPA Response: EPA disagrees. On page 7 of the Proposed Plan, EPA discusses the possibility of buried drums in the vicinity of former Lagoon C. Each alternative except Alternative 1 includes a component which addresses the excavation and ultimate disposal of any such drums.

@ State Comment: The statement that permanent disposal options would be utilized to the maximum extent practicable is not supported by the comparative analysis of alternatives since there is no discussion as to why offsite disposal was eliminated durin the selection process. It should also be noted that CERCLA Section 121 (b)(1) mandates that remedial actions be selected that are: 1) protective of human health and the environment, 2) cost effective, and 3) utilize permanent solutions and treatment technologies to the maximum extent practicable. However, the remedy proposed involves treatment methods to contain the contaminated soils onsite (i.e. slurry wall and capping), not to permanently remediate them.

EPA Response: The Proposed Plan describes the remedial options that were considered in detail in the RI/FS Report. Off-site disposal of all the contaminated soils is a process option that was screened out prior to the development and preliminary screening of alternatives. Therefore, it is not appropriate to discuss that option in the comparative analysis of the Proposed Plan. As stated on page 1 of the Proposed Plan, the Proposed Plan is not a substitute for the RI/FS which is the primary source of detailed information on the process options and remedial alternatives analyzed for addressing the Site.

As stated in the ROD, Alternative S6 does involve treatment of the principal threats (i.e. VOC-contaminated soils) posed by the Site. EPA believes Alternative S6 is protective of human health and the environment, is cost-effective and utilizes permanent solutions and treatment technologies.

@ State Comment: Although a cap may be placed over the soils to prevent surface water from eroding the soils and carrying contaminants from the Site directly into adjacent streams, movement of groundwater from below into the buried contaminated soils can still transport contaminants to the streams and to other parts of the ground water aquifer. A cap will reduce the infiltration rate of water through the soils, but water can still penetrate down through the soils, and cause the migration of contaminants that are left in the soils.

EPA Response: EPA does not disagree. However Site data indicates that the metals are not impacting ground water above MCLs. As stated in the draft ROD, the seeps from the shallow aquifer which discharge to the stream will be included in long-term monitoring of the Site. Therefore, the cap is an effective means of mitigating the risks posed by the Site. In addition the ROD calls for treatment of VOC-contaminated soils to levels that will not impact ground water above drinking water standards. For the trichlorobenzene ("TCB") Organic Hot Spots which are not amenable to VE, the slurry wall and the clay cap will provide an effective means of isolating the TCB Organic Hot Spots from contact with the ground water in the overburden.

@ State Comment: Under the "To Be Considered" section, it isincorrectly stated that the remedy for the site will comply with the applicable portions of the PADER Groundwater Quality Protection Strategy. This has not been demonstrated in the ROD. In our previous comment letter, we discussed the application of the Groundwater Quality Protection Strategy and the use of

MDLs to back-calculate contaminant levels remaining in soils that would not impact groundwater above background levels. Although the Department has strongly recommended the use of MDLs in calculating cleanup levels, and provided information on site contaminant MDLs, the use of MDLs has not been incorporated into the ROD.

EPA Response: EPA disagrees. In the Department's letter of September 21, 1993 the following was stated, "Two options appear reasonable to the Department: 1) Contaminated soils onsite should be remediated so that the cap is only needed for the limited areas (process basins and spray fields) currently proposed, or 2) The cap should be extended over all areas where soils contain leachable contaminants above MDLs. In either case the remedy should include a provision for a ground water monitoring program at the site." EPA has incorporated the use of MDLs into the ROD to define the areal extent of the cap. In Section IX.A.4.A. Construction of Cap. The ROD states the following "The cap shall be constructed in the areas where the soils exceed any of the following criteria: the hazard index for exposure to contaminated soils exceeds 1; exposure to contaminated soils represents a carcinogenic risk greater than 1 x 10[-4]; or when using the Synthetic Precipitation Leaching Procedure, listed as EPA method 1312, the soils contain leachable contaminants that will leach to levels above the method detection limits for those contaminants using Drinking Water Analytical methods as described in Tables 15A and 15B. EPA has incorporatedground water monitoring into Operable Unit One.

@ State Comment: The draft ROD states that certain areas of the site will be capped based on their hazard indices and risk levels. These areas should be identified and shown on a map in the ROD. The cap must be effective in preventing infiltration and lateral ground water flow beneath the capped areas. It should be demonstrated that the capped areas are extensive enough to minimize lateral flow infiltration to those areas where contaminant levels exceed the cleanup requirements.

EPA Response: The areas to be capped include the process area and selected areas of the spray field. The exact location and extent of the areas to be capped will be determined by field confirmation sampling in the remedial design stage.

@ State Comment: The discussion of principle threats identifies "Organic Hot Spots" of TCE and TCB as the principle threats at the site. While the areas of VOC contamination will be treated, the areas of TCB contamination will only be contained. Also, on page 14 of the draft ROD, chromium is identified as the contaminant associated with the highest hazard quotients. If TCB is considered a principle threat and chromium has the highest hazard quotients, why are TCB and chromium contaminated areas merely being contained (by the cap and slurry wall) and not treated to reduce toxicity and hazard?

EPA Response: Although chromium may be associated with the highest hazard quotient (refer to page 13 of ROD for definition of hazard quotient), the contaminant does not represent a "principle threat" (refer to page 16 of ROD for definition of principle threat. Likewise the TCB does not represent a "principle threat". Engineering controls are an appropriate response for addressing contaminants that do not represent a principle threat.

@ State Comment: The draft ROD states on Page 20 that vapor extraction systems would be installed in areas of the site where the concentration of VOCs in the soil exceeds levels that "are not a threat to groundwater". Is this based upon leaching to ground water above background levels or above MCLS? The Department recommends the use of MDLs, not MCLs in determining cleanup requirements.

EPA Response: EPA has revised the ROD to state that VOC systems would be installed in the areas of the Site where the concentration of total VOCs in soil exceeds 22.8 mg/kg. Cleanup levels in soils are not based on the use of MCLs or MDLs to back calculate a cleanup level in soil, but rather the VE system shall operate until nondetect levels or no significant removal levels of the determined indicator compounds have been demonstrated for three

consecutive months and subsequent spike values reveal nondetect or no significant removal levels.

@ State Comment: The Department suggests that the stream water and sediments and ground water be considered a separate operable unit.

EPA Response: The ROD clearly states that ground water and mercury contamination of the stream corridor will be addressed in Operable Unit Two.

@ State Comment: The remedy does not specify institutional controls to ensure long-term effectiveness and permanence. The ROD should include deed restrictions.

EPA Response: Deed restrictions have been added to the remedy.